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**UNIVERSITAT POLITÈCNICA
DE CATALUNYA**

Grau en Mitjans Audiovisuals

THE LEGEND OF THE PURPLE EYES

Report/Memòria

RAÚL REYES LUQUE

PONENT: DAVID MINGUILLÓN PLANELL

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Resum

El projecte consisteix en un curtmetratge d'animació de Fantasia i Aventures que combina animació 2D i 3D en la forma d'una novel·la gràfica. La història narra l'aventura de la Keira i la seva germana petita Kaylee, la qual és segrestada pel Cavaller Negre que vol complir els seus malvats plans basats en la llegenda dels ulls liles. En aquesta Memòria es pot seguir el procés de creació d'aquest projecte a través de les seves seccions principals; recerca, pre-producció, producció i post-producció.

Resumen

El proyecto consiste en un cortometraje de animación de Fantasía y Aventuras que combina animación 2D y 3D en la forma de una novela gráfica. La historia narra la aventura de Keira y su hermana pequeña Kaylee, la cual es secuestrada por el Caballero Negro que quiere cumplir sus malvados planes basados en la leyenda de los ojos púrpura. En esta Memoria se puede seguir el proceso de creación de este proyecto a través de sus secciones principales; investigación, pre-producción, producción y post-producción.

Abstract

The project consists in a Fantasy Adventure Animated Short film, which combines 2D and 3D animation in the form of a graphic novel. The story tells the adventure of Keira and her little sister Kaylee, who is kidnaped by the Black Knight in order to fulfil his evil plans based on The Legend of the Purple eyes. In this Report you can follow the creation process of this project throughout its main sections; research, pre-production, production and post-production.

Index.

Figures Index.....	V
1. Project Aims.....	1
1.1. Overview and Aims	1
1.2. Target Audience.....	2
2. Project Description and Planning.....	3
2.1. Project Outline	3
2.2. Origins of the Project.....	3
2.3. Project Equipment and Facilities	4
2.4. Software	4
2.5. Project Work plan	5
2.5.1. Work breakdown structure.....	5
2.5.2. Project Task Schedule.....	5
3. Research: The Cel Shading Technique	9
3.1. What is Cel Shading	9
3.2. History and Evolution.....	10
3.2.1. Video Games.....	11
3.2.2. Movies and Other.....	16
3.3. Cel Shading nowadays.....	19
3.3.1. Current Panorama	19
3.3.2. Different Uses and Objectives	20
3.3.3. A Potential Technique.....	21
3.4. Good Cel Shading Employment	22
3.4.1. Aspects to consider when producing in Cel Shading	22
3.4.2. Cel Shading in its own way.....	24
3.5. How Cel Shading works	25
3.5.1. Shading	25
3.5.2. Outlines	26
3.5.2. Texturing.....	28
3.6. Types of Cel Shading.....	29
3.6.1. Materials.	30
3.7. Conclusions about Cel Shading	31

4. Pre-Production.....	33
4.1. Devolving the Idea.....	33
4.1.1. First Story Outline.....	34
4.1.2. References.....	35
4.1.3. Creation of the Trailer.....	39
4.1.4. Definitive Story Line.....	39
4.2. Storyboard and Animatic.....	44
4.3. Characters Design.....	45
4.3.1. Keira.....	45
4.3.2. Kaylee.....	54
4.3.3. The King.....	63
4.3.4. Ewan – Young Black Knight.....	74
4.3.5. The Black Knight.....	84
4.3.6. Castle Guards.....	93
4.3.7. Farmer.....	98
4.4. Scene Design.....	103
4.4.1. Kingdom Atlas.....	106
4.4.2. Castle Library.....	108
4.4.3. Castle Corridors.....	110
4.4.4. Throne Room.....	111
4.4.5. The Castle.....	113
4.4.6. Cave Access.....	116
4.4.7. Knight's Cave.....	117
4.4.8. Keira and Kaylee House.....	119
4.4.9. Purple Mineral Mines.....	120
4.4.10. High Mountain Views.....	122
4.4.11. Castle Path.....	123
4.4.12. Castle Outskirts.....	124
4.4.13. Tower Room.....	125
4.5. Graphic Style: 2D and 3D.....	126
4.5.1. Animation Style.....	128
5. Production.....	131
5.1. Advanced Layout.....	131

5.1.1. Scene 01: Book Intro.....	136
5.1.2. Scene 02: Castle Library	137
5.1.3. Scene 03: Corridor Scene.....	140
5.1.4. Scene 04: Throne Room.....	141
5.1.5. Scene 05: King Leaves.....	141
5.1.6. Scene 06: Evil Prince	146
5.1.7. Scene 07: Expulsion Scene	150
5.1.8. Scene 08: Enter Cave	151
5.1.9. Scene 09: Knight On Horse	151
5.1.10. Scene 10: Keira and Kaylee House.....	152
5.1.11. Scene 11: Training	152
5.1.12. Scene 12: Spying.....	152
5.1.13. Scene 13: Mineral Mines	152
5.1.14. Scene 14: Kdinap Scene.....	153
5.1.15. Scene 15: Keira Realizes.....	153
5.1.16. Scene 16: Chase Scene.....	155
5.1.17. Scene 17: Trapdoor Scene.....	155
5.1.18. Scene 18: Tower Room.....	156
5.2. Production Ending	157
5.2.1. 3D Modeling	158
5.2.2. Painting and Lighting	161
5.2.3. Audio	164
5.2.3. Intellectual Property	165
6. Post-Production.....	167
7. Conclusions	169
8. References	171
8.1. Bibliogrpahy	173

Figures Index.

Fig. 3.1. Shading comparison	10
Fig. 3.2. <i>Fear Effect</i> (1999) In game capture	10
Fig. 3.3. <i>Jet Set Radio</i> (2000) In game capture	11
Fig. 3.4. <i>The Legend of Zelda: The Wind Waker</i> (2002) In game cutscene capture	11
Fig. 3.5. <i>Okami</i> (2006) In game capture of the HD remake version	12
Fig. 3.6. <i>Dragon Ball Z: Budokai Tenkaichi 3</i> (2007) In game capture	12
Fig. 3.7 <i>MadWorld</i> (2009) In game capture	13
Fig. 3.8 <i>Prince of Persia</i> (2008) In game capture	14
Fig. 3.9 <i>Eternal Sonata</i> (2007) In game capture	14
Fig. 3.10 <i>Borderlands 2</i> (2012) In game capture	14
Fig. 3.11 <i>Naruto Shippuden: Ultimate Ninja Storm Generations</i> (2012) In game capture ..	15
Fig. 3.12 <i>Naruto Shippuden: Ultimate Ninja Storm Generations</i> (2012) In game capture ..	15
Fig. 3.13 <i>Futurama</i> (1999-2003) Opening capture	16
Fig. 3.14 <i>The Iron Giant</i> (1999) Movie capture.	17
Fig. 3.15 <i>Appleseed</i> (2004) Movie capture	17
Fig. 3.16 <i>Appleseed Ex Machina</i> (2007) Movie capture	18
Fig. 3.17 <i>A Scanner Darkly</i> (2006) Rotoscoping process	18
Fig. 3.18 <i>Howl's Moving Castle</i> (2004) Movie Capture	19
Fig. 3.19 Posterized photography	24
Fig. 3.20 Appleseed Comparison	25

Fig. 3.21 Normals of a 3D Object.....	25
Fig. 3.22 Cel shaded 3D Model.....	25
Fig. 3.23 Cel shaded and Outlined 3D Model.....	26
Fig. 3.24 Outlined image by Edge-detection from Unreal Developer Network.....	27
Fig. 3.25 Outlines of an image by Edge-detection from Unreal Developer Network.....	27
Fig. 3.26 Back elements in Black.....	27
Fig. 3.27 Back elements + Shading.....	27
Fig. 3.28 “Art Shader” on Cinema 4D.....	28
Fig. 3.29 Artistic texture on 3D model.....	28
Fig. 3.30 Artistic Render Scene.....	29
Fig. 3.31 Cel shaded Material.....	30
Fig. 3.33 Sketch Material.....	30
Fig. 3.34 Wooble Sketch Material.....	30
Fig. 3.35 Artistic Shader Materials; Shirt, Trousers, Ground, Skin.....	30
Fig. 4.1 The Sister, trapped in the crystal, the Monster, and the Main Character.....	33
Fig. 4.2 The Art of Tangled Artbook.....	35
Fig. 4.3 Glen Keane.....	36
Fig. 4.4 <i>The Legend of Zelda: Ocarina of Time</i> (1998) In game capture.....	37
Fig. 4.5 Metal Gear Solid: Peace Walker (2010) Cutscene capture.....	37
Fig. 4.6 <i>Princess Mononoke</i> (2004) Movie Capture.....	38
Fig. 4.7 Hayao Miyazaki.....	38

Fig. 4.8 Keira three-quarter view	47
Fig. 4.9 Keira front view	48
Fig. 4.10 Keira profile view	49
Fig. 4.11 Keira back view	50
Fig. .12 Keira all views	51
Fig. 4.13 Keira Color Sheet	52
Fig4.14 Keira skirt detail	52
Fig. 4.15 Keira all expressions	53
Fig. 4.16 Kaylee three-quarter view	56
Fig. 4.17 Kaylee front view	57
Fig. 4.18 Kaylee profile view	58
Fig. 4.19 Kaylee back view	59
Fig. 4.20 Kaylee all views	60
Fig. 4.21 Kaylee Color Sheet	61
Fig. 4.22 Kaylee skirt detail and freckles	61
Fig. 4.23 Kaylee all expressions	62
Fig. 4.24 King three-quarter view	65
Fig. 4.25 King front view	66
Fig. 4.26 King profile view	67
Fig. 4.27 King back view	68
Fig. 4. 28 King all views	69

Fig. 4.29 King Color Sheet	70
Fig. 4.30 Young and blonder King's Hair	71
Fig. 4.31 King without crown – Three-Quarter	71
Fig. 4.32 King without crown – Other views	71
Fig. 4.33 King's body shape – Three-Quarter	72
Fig. 4.34 King all expressions	73
Fig. 4.35 Ewan three-quarter view	76
Fig. 4.36 Ewan front view	77
Fig. 4.37 Ewan profile view	78
Fig. 4.38 Ewan back view	79
Fig. 4.39 Ewan all views	80
Fig. 4.40 Ewan Color Sheet	81
Fig. 4.41 Ewan without crown – Three-Quarter	82
Fig. 4.42 Ewan without crown – Other views	82
Fig. 4.43 Ewan all expressions	83
Fig. 4.44 Black Knight three-quarter view	86
Fig. 4.45 Black Knight front view	87
Fig. 4.46 Black Knight profile view	88
Fig. 4.47 Black Knight back view	89
Fig. 4.48 Black Knight all views	90
Fig. 4.49 Black Knight Color Sheet	91

Fig. 4.50 Black Knight glowing eyes	91
Fig. 4.51 Black Knight all expressions	92
Fig. 4.52 Castle Guard views	94
Fig. 4.53 Castle Guard all views	95
Fig. 4.54 Castle Guard Color Sheet	96
Fig. 4.55 Older Alternative Guard views	96
Fig. 4.56 Guard all expressions	97
Fig. 4.57 Farmer views	99
Fig. 4.58 Farmer all views	100
Fig. 4.59 Farmer Color Sheet	101
Fig. 4.60 Farmer Eyes	101
Fig. 4.61 Farmer all expressions	102
Fig. 4.62 <i>Neuschwanstein Castle</i>	103
Fig. 4.63 <i>Mont Saint-Michel Castle</i>	104
Fig. 4.64 <i>The Château de Chambord</i>	104
Fig. 4.65 <i>The Hohenzollern Castle</i>	105
Fig. 4.66 Kingdom Atlas Map	107
Fig. 4.67 Kingdom's Flag	108
Fig. 4.68 Castle Library Design	109
Fig. 4.69 Castle Corridors Design	110
Fig 4.70 Throne Room Design	112

Fig. 4.71 The Castle Main Design	114
Fig. 4.72 Castle Courtyard Design	115
Fig. 4.73 Behind the Castle Design	115
Fig. 4.74 Access to the cave Design	116
Fig. 4.75 Past Cave Design	118
Fig. 4.76 Present time Cave Design	118
Fig. 4.77 Keira and Kaylee House Design	119
Fig. 4.78 Mountain path Design	121
Fig. 4.79 Purple Mineral Mines Design	121
Fig. 4.80 High Mountain views Design	122
Fig. 4.81 The path to the Castle Design	123
Fig. 4.82 Castle Outskirts Design	124
Fig. 4.83 Tower Room Design	125
Fig. 4.84 Keira 3D Modeling	126
Fig. 4.85 Main integration and animation test	128
Fig. 4.86 The Animator's Survival Kit	129
Fig. 5.1 Modeling of Throne Room with Basic forms	131
Fig. 5.2 Reference Human Figure Object and Real 3D Camera Shot	132
Fig. 5.3 Real 3D Camera creating a Real shot	132
Fig. 5.4 Drawing of the King into the Real 3D shot	133
Fig. 5.5 King Fade Animation in After Effects	134

Fig. 5.6 After Effects Opacity Problem.....	134
Fig. 5.7 Alpha Add Blending Mode.....	135
Fig. 5.8 Simplified Intro Sketch.....	136
Fig. 5.9 Painted Materials.....	138
Fig. 5.10 Vase Decoration painted texture.....	138
Fig. 5.11 Stool detail render.....	138
Fig. 5.12 Furniture detail render.....	139
Fig. 5.13 Clear Castle Library Render.....	139
Fig. 5.14 Final Version of Castle Library 3D Modeling.....	140
Fig. 5.15 Realistic Mountain Test.....	141
Fig. 5.16 Basic castle surroundings scene.....	142
Fig. 5.17 Mountain materials applied to the scene.....	142
Fig. 5.18 Too much realistic mountains.....	143
Fig. 5.19 Different Art Shaders.....	143
Fig. 5.20 Art Shader applied to Mountains.....	143
Fig. 5.21 Different Mountain Tests.....	144
Fig. 5.22 Definitive Mountains.....	145
Fig. 5.23 Definitive Castle Mountains Modeling Process.....	145
Fig. 5.24 2D Ewan separated into 6 layers.....	146
Fig. 5.25 Front view of 6 layer Ewan.....	147
Fig. 5.26 Side view of 6 layer Ewan.....	147

Fig. 5.27 Ropes Scene in Cinema 4D	149
Fig. 5.28 3D Rope Scene Result	149
Fig. 5.29 Transition Guillotine	150
Fig. 5.30 Entire Kingdom 3D scene	154
Fig. 5.31 Tower Room Cameras	172
Fig. 5.32 Brick Texture	159
Fig. 5.33 Decoration Texture	159
Fig. 5.34 Decoration Texture in B/W for Displacement	159
Fig. 5.35 Displacement channel on Cinema 4D	160
Fig. 5.36 Path texture in Black and White for the Bump channel	160
Fig. 5.37 Bump channel on Cinema 4D	161
Fig. 5.38 ArtRage color blending	162
Fig. 5.39 ArtRage pencil tool	163
Fig. 5.40 ArtRage canvas	163
Fig. 5.41 Audio Premiere Pro screenshot	165
Fig. 5.42 Creative Commons Attribution 3.0 License	165
Fig. 6.1 Night Color Correction	167
Fig. 6.2 Before and after post-production	167

1. Project Aims

1.1. Overview and Aims

My project consists in the realization of an Animated Short, combining 2D and 3D techniques to achieve a professional quality product, obtaining the feel of a “graphic novel”.

One of the objectives of the project will be create a professional audio-visual piece, which will help me to demonstrate my skills to the professional world when looking for job in this field of the industry.

Another objective is to surpass myself gathering all the knowledge I have learnt from my degree and putting it into a major project.

I want to create a world with live, powerful characters, and very atmospheric. Also I want to create an engaging story, with epic plot and magic touch. Also I expect to learn new things and techniques that I have not learnt yet. One of the main objectives of this project is also to meet the guidelines for complete my degree.

I have to put effort on every aspect of the project to achieve a professional quality look. Through the search of perfection on the different aspects of the pre-production, production, and postproduction I will reach a consistent quality level. This will contribute to the objective of getting high quality level, which involves all of the knowledge I have learnt.

I would like to achieve perfect encoding and format production to give a polished and professional final look.

I have to achieve a very well integration between the 2D and 3D content, for this purpose I would have to investigate different 3D techniques, which will help me to fulfil my objectives of investigation and learning.

I do not want to endanger the quality of the project by going so far technically, I want to achieve a professional look in terms of composition and art direction rather than make a

demonstration of powerful and stunning audio-visual techniques. This is one of the main points of my aims.

I want to create an animation with feeling, working on small details that normally people do not see when they see animation, but they feel them. That will be part of getting a live and atmospheric world.

I have to build a solid plot with solid characters and no contradictions; with that base I would create a consistent magic world and story.

At the end one of the main objectives when creating animation is transmitting, and make the people who watch the final product enjoy the experience. This is also one of the main objectives.

1.2. Target Audience

With some exceptions, normally occidental animation is addressed to children, but there are different ways to manage your target audience even if your animation is suitable for children. I would like to address my animated short for all ages but in a specific way, sometimes the rating “For all ages” means a movie is addressed to children; this is not what I want. I want to make my film enjoyable both by children and adults, as some animation studios make with their films (*Studio Ghibli*, *Pixar*). Unfortunately not every adult is capable of enjoy this kind of animation addressed for all ages. My target is definitely children and this kind of adult that enjoy animation.

2. Project Description and Planning

2.1. Project Outline

As a normal audio-visual plan, my project will be divided in three major parts:

Pre-production:

I am going to dedicate much of the time to this part, because a solid pre-production base is very important for an animation project. I am also going to dedicate a lot of time on research and investigation, to find the perfect style and techniques for my project. So this stage it is going to be the most essential and large part of the project.

Production:

The production will include all the processes to produce and built the necessary elements for the project. Modeling, drawings, and materialization of the pre-production will be achieved in this part. It is also a long part of the project, but with a good and solid pre-production it will be easier and faster.

Post-Production:

In this part I will assemble all the material produced, the video part with the audio, etc. In this part I will also do the final color correction and final details.

2.2. Origins of the Project

At the beginning my idea was to make a full 3D short, based on video game style. But while thinking on the time and the possibilities, I changed my mind. If I wanted to center my efforts on modeling and drawing, which are my preferred skills, a full animation work will keep a lot of time.

Then I investigated different possibilities and I came to the idea of doing kind of “comic in movement” or “graphic novel” combining 3D and 2D animation, which is very original. Doing it like that, I can put more effort on the modeling and the design. Spending more time on the creative aspect rather than doing a repetitive and mechanical work. Also with this method I can achieve a more ambitious plot.

2.3. Project Equipment and Facilities

Equipment:

- High performance computer/s.
- Graphics tablet.
- Microphone.
- Audio Recorder.

Facilities:

- Glyndwr University: PC studio, Room T108A in the Centre for Creative Industries.
- My own Home.
- Tecnocampus University: Computer Rooms, etc.

2.4. Software

As an Audio-visual Animation production, one of the most important parts is the software, where everything is developed. Here is the main software I used:

Cinema 4D R14:

- Scenario and objects 3D modeling
- Rendering

Adobe After Effects CS5.5:

- Animating
- Postproduction

Artrage Studio Pro:

- Character and scenario painting & drawing
- Character and Scenario Design

Adobe Premiere Pro CS5.5:

- Video Editing
- Postproduction
- Audio Editing

At the beginning I planned to use Propellerheads Reason for the Audio and Autodesk Maya 2012 for the 3D section. Finally I did not have so much time to dedicate to the audio part, so I have edited it directly in Adobe Premiere Pro CS5.5.

During the investigation and the developing of my pre-production, I have done two courses of Cinema 4D, one of 40h and another of 24h. In this courses I learnt how to use Cinema 4D better than Maya. With Cinema 4D I have got a high level of control over what I am doing, that is why I decided to do the 3D part with this software. Also during my investigation I realized how powerful is the Sketch and Toon module of Cinema 4D, which has been the base of the 3D elements of my short.

2.5. Project Work plan

In this section I will talk about the original planning I did at the beginning of the Project, and I will comment in which way I was able to meet the deadlines I set.

2.5.1. Work breakdown structure

You can found the original work breakdown structure tables in the “Annex I” section. They are too extensive to include in the body of the work.

I have written the **work breakdown structure** under certain parameters:

- There are planned up to 4-5 hours per day, 5 days a week.
- With this (counting 5 hours) there will be 100h of work per month, and 1100h for the entire project.
- Plus the possibility of working more hours, and recover time on the weekends to fulfil the terms.

The guidelines say that I have to demonstrate at least 600h of work, so that will be achieved and widely surpassed.

2.5.2. Project Task Schedule

Here is the timetable/periods planning I have done at the beginning of the project, it goes from the beginning to the ending and delivery date.

1st month - July 2012

- 1st week:
 - o 1/2 Think on the story/Brainstorming.
 - o 1/2 Work on the characters and their interactions.
- 2nd week: Write a complete storyline.
- 3rd week: Create Storyboard (first version).
- 4th week: Create the animatic (first version).

Holidays - August 2012**Project Planning - September 2012****2nd month - October 2012**

- 1st week: Design the characters.
- 2nd week: Design main scenarios.
- 3rd & 4th week: Investigation of 2D-3D techniques.

3rd month - November 2012

- 1st week: Study a suitable graphic style.
- 2nd weeks: Test the different techniques and researches.
- 3rd & 4th week: Create the new and improved Storyboard.

4th month - December 2012

- 1st week: Create new and improved Animatic.
- 2nd & 3rd & 4th week: Characters modeling.

5th month - January 2013

- 1st week: Characters modeling.
- 2nd & 3rd week; Characters texturing.
- 4th week: Characters Rigging.

6th month - February 2013

- 1st week: Characters Rigging.
- 2nd & 3rd & 4th week: Scenario & objects modeling.

7th month - March 2013

- 1st week: Scenario & objects modeling.
- 2nd & 3rd & 4th week: Scenario & objects texturing.

8th month - April 2013

- 1st & 2nd week: Music composing & search.
- 3rd week:
 - o 1/2 Voice Recording.
 - o 1/2 Audio SFX production & search.
- 4th week: 3D Montage of each scene.

9th month - May 2013

- 1st week: 3D Montage of each scene.
- 2nd week: Pre-render each scene elements.
- 4th week: Animation of pre-rendered elements in 2D.

10th month - June 2013

- 1st & 2nd & 3rd week: Animation of pre-rendered elements in 2D.
- 4th week: Polish & supervise all the production material.

11th month - July 2013

- 1st & 2nd week: Video & Audio Montage.
- 3rd week: Post-production processes and FX video effects.
- 4th week:
 - o 1/2 Post-production process and FX video effects.
 - o 1/2 Encoding and exporting.

This Schedule has been in constant changing and reformulating during the development of the project. Some important decisions about the production had changed the planning on the way.

The pre-production and investigation has taken so much longer, and the decision of which part of the work was going to be 3D or 2D was taken at the very end of the pre-production.

The characters have been done 2D, so all the planning for the modeling and rigging is replaced for drawing and painting. I will detail all this decisions in the next chapters of the document.

Furthermore, when pre-producing I was not 100% conscious of how many work represents an animation project for one single person. All the stages of the project took longer than I expected. That resulted in having less time for doing the last parts of the work planned.

3. Research: The Cel Shading Techinque

I was going to combine 2D and 3D in my project, so I thought that it was strictly necessary to research about this technique called Cel Shading, which is used to make 3D look like 2D content. So I analysed the technique in depth:

With the research and analysis of Cel Shading history, evolution, performance and technical use, I plan to acquire the necessary knowledge to decide and execute the most appropriate technique and visual style for my Final Project.

Extracting my own conclusions about Cel Shading, and analysing why the technique is used and which are the strengths and weaknesses, I want to achieve a proper conclusion of how it has to be employed the technique.

With direct testing and practical experimentation, I want to arrive to a proper conclusion on which type and variation of cel shading is the best for my project, both on technical and artistic aspects.

3.1. What is Cel Shading

Cel Shading, also called toon shading or cel/toon shader, is a 3D technique based on a specific shading method, which consists in recreate the look of traditional 2D animation cels with the use of flat colours for shading 3D objects in a unrealistic way.

But it is not only referred to a shading method, nowadays Cel Shading is known also and more generally as a artistic style/method of making 3D graphics seem cartoonish with the use of specifically colored textures, and also using outlines to simulate drawing lines. So the research will include also those 3D graphics with realistic shading, which look like cartoons using Cel shading elements.

“Cel Shading” will be treated as a whole artistic style rather than a specific technique. I can explain the style more in detail but a picture is worth a thousand words. As you can see on the Figure 3.1 I have made a comparison; realistic shading on the left, Cel Shading on the right.

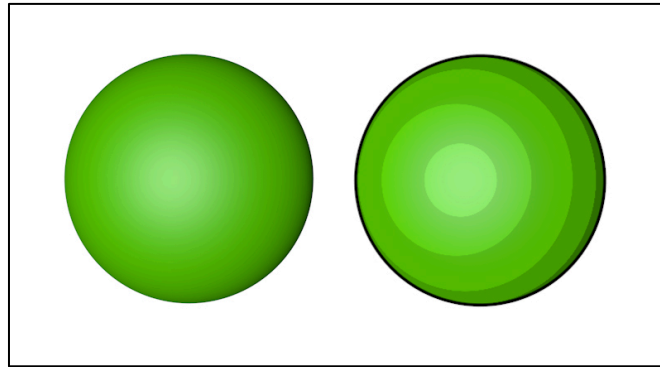


Fig. 3.1 Shading comparison.

3.2. History and Evolution

Although this technique is used in so many fields, it is widely and frequently used in Video Games. Is in this field where the technique has been more used and exploded, and its evolution is linked to it. It does not have a specific creator.

The commercial use of the Cel Shading technique starts with Video Games. Even before there was a standard and known definition of the technique, a video game called *Fear Effect* (1999) used a very similar style for representing game characters.



Fig. 3.2 *Fear Effect* (1999) In game capture.

But it was not proper real "Cel Shading". Due to limitations of the PlayStation system itself, it has no real-time shading, so shadows and colors where simple pre-rendered flat textures. Also it has no black outlines due to the lack of real-time shading rendering.

The first commercial use of real Cel Shading was done in the game *Jet Set Radio* (2000). This game had real-time Cel Shading, with the use of black thick outlines and flat colors with real-time shadows, giving the game a very successful cartoon appearance for the time.



Fig. 3.3 *Jet Set Radio* (2000) In game capture.

3.2.1. Video Games

Let's do a review over the most significant Video Games using Cel Shading. In this field the technique has evolved considerably over the years.

The Legend of Zelda: The Wind Waker (2002) is one of the most famous cel shaded games in the history. With big and very expressive toon styled characters, bold colors, and a great artistic design, this game was well known about bringing to the Cel Shading a great smoothness in front of past cel shaded models which were stiffer than usual 3D shading and 2D traditional animation. At the beginning the graphics were poorly accepted, some people dislike the toon aspect, which was uncommon in Zelda series and more childish than the other games of the saga.



Fig. 3.4 *The Legend of Zelda: The Wind Waker* (2002) In game cutscene capture.

Ōkami (2006) shows how versatile the Cel Shading technique can be, recreating a *Sumi-e* style, which is a Japanese Ink painting method. The game really looks like brush painting. Its style is not based on Cel Shading lighting, but is based on outlines and flat colors in combination of painted textures so it should be included under Cel Shading artistic technique.



Fig. 3.5 *Okami* (2006) In game capture of the HD remake version.

Dragon Ball Z: Budokai Tenkaichi 3 (2007) is a clear example of how this technique can recreate the style of traditional 2D series, such as *Dragon Ball*, with the use of 3D graphics. Preserving all the characteristics that represent the original 2D hand drawn animation series.

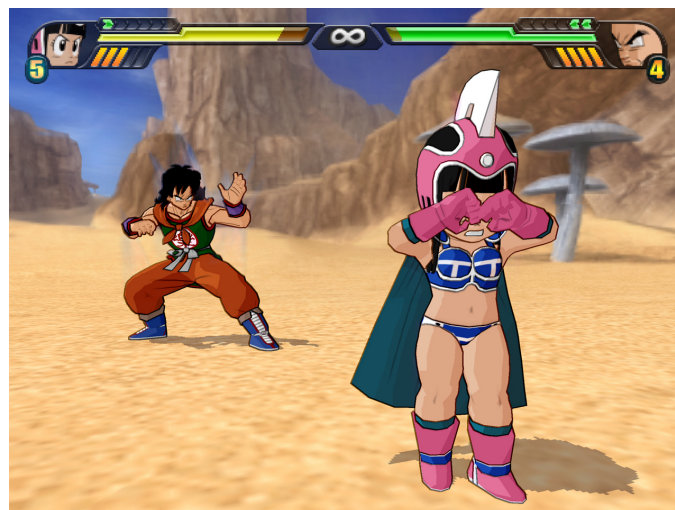


Fig. 3.6 *Dragon Ball Z: Budokai Tenkaichi 3* (2007) In game capture.

Since the popularization of Cel Shading, almost every Video Game based in Japanese “anime and manga” series, use Cel Shading technique to resemble the original works.

MadWorld (2009) uses a type of Cel Shading that represents the look of a classic black & white comic book, the graphic style is inspired by Frank Miller’s *Sin City* (1991). The game uses nearly only 4 colors, black and white/sepia for characters and world, yellow for graphics, and red for blood.

This game demonstrates that Cel Shading can also be used for adult and dark stories, and not only for colourful cartoon style.

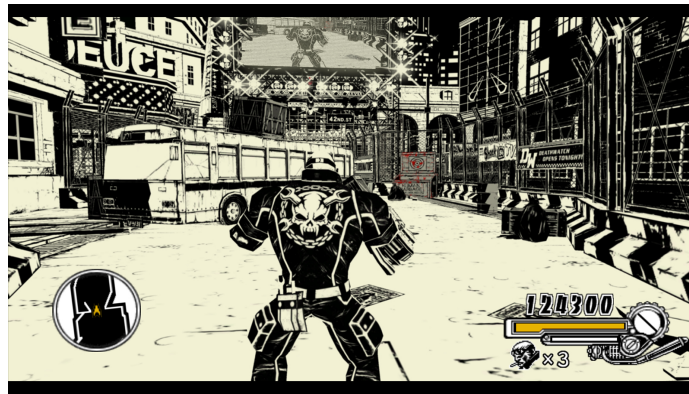


Fig. 3.7 *MadWorld* (2009) In game capture.

The forms of the game are difficult to understand with static images due to the great amount of elements on the screen and the simple color palette.

With the arrival of the High Definition and the “Next Generation” Video Game systems, graphics improved significantly. There are some Cel Shading titles that improve the technique reaching some surprising results.

Different games demonstrated that Cel Shading is a very adaptable graphic style, within different game genres using it in a right way and with the beauty of the High Definition.

Prince of Persia (2008) is an action-adventure platformer, *Eternal Sonata* (2007) is a Japanese RPG (Role Playing Game) and *Borderlands 2* (2012) is a first-person shooter game. These games are an example of the variety that can be achieved.



Fig. 3.8 *Prince of Persia* (2008) In game capture. Fig. 3.9 *Eternal Sonata* (2007) In game capture.

Although *Borderlands 2* (2012) use realistic shading instead of Cel Shading, is widely encompassed under Cel Shading artistic technique. This is because it uses real time black outlines for in game elements. It also uses pencilled textures, giving the game a cartoonish look.



Fig. 3.10 *Borderlands 2* (2012) In game capture.

One of the greatest uses of Cel Shading in the actual Video Game generation is *Naruto Shippuden: Ultimate Storm Generations* (2012). This fighting game is based on animated 2D series.



Fig. 3.11 *Naruto Shippuden: Ultimate Ninja Storm Generations* (2012) In game capture.

In this game the technique just got really perfected, the quality of the animations and the graphic style surpasses the one of the original 2D hand drawn animation series, conserving all of the characteristics of the original 2D characters.



Fig. 3.12 *Naruto Shippuden: Ultimate Ninja Storm Generations* (2012) In game capture.

The animations look really smooth and soft, with the typical flat shaded characters and plenty of visual effects, like fire, smoke, light, etc. It really looks like 2D is being drawn in real time. And the combination of all the elements results in a very harmonic blend, which looks absolutely perfect. It is one of the best uses of Cel Shading nowadays.

3.2.2. Movies and Other

Cel Shading in other media is not as popular as it is in Video Games, there are a very few works compared to the large amount of Cel Shading Video Games.

In Movies, TV series and other media, Cel shading is used for complementing another types of animation, rather than being the center and a full production technique.

One of the most frequent uses of Cel shading is in 2D animated movies/series, for animate things that otherwise would be harder to do with hand drawn animation.

In 2D series like *The Simpsons* (1989 – present), *Futurama* (1999-2003), or *Family Guy* (1999-2002), we can see that some elements are in cel shaded 3D. Normally is used for cars, machines, and non-organic objects. This combination was frequently used in 2D hand drawn productions, like Disney modern movies such as *Tarzan* (1999).



Fig. 3.13 *Futurama* (1999-2003) Opening capture.

Futurama's (1999-2003) opening sequence is fully done with cel shaded 3D.

The Movie *The Iron Giant* (1999) uses a combination of traditional animation and cel shaded computer animation through the entire Movie. The Giant Robot is computer animated, and the rest is done by traditional hand drawn animation.

In the process of integrating the two types of animation, they created a specific technique in order to make 3D lines look irregular. With this random imperfection in lines they achieved a 2D hand drawn animation look. (Scott Johnston Talks *Iron Giant* 10th Anniversary, 2009)

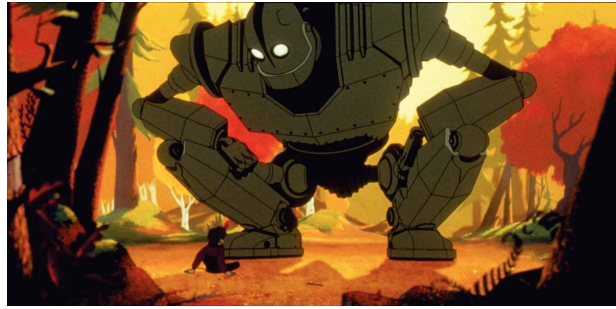


Fig. 3.14 *The Iron Giant* (1999) Movie capture.

We can see Cel Shading implemented in short films and advertisements, is a technique that looks jazzy and eye-catching, and it is more usual to see. But it is not common to see Movies with full implementation of the technique, is very hard to find them.

One of the most known full cel shaded movies is *Appleseed* (2004) based on the work of Masamune Shirow. The look of this movie is similar to cel shaded Anime based Videogames, but it does not look like 2D animation, it is more like 3D with flat shaders, resulting in a strange blend.

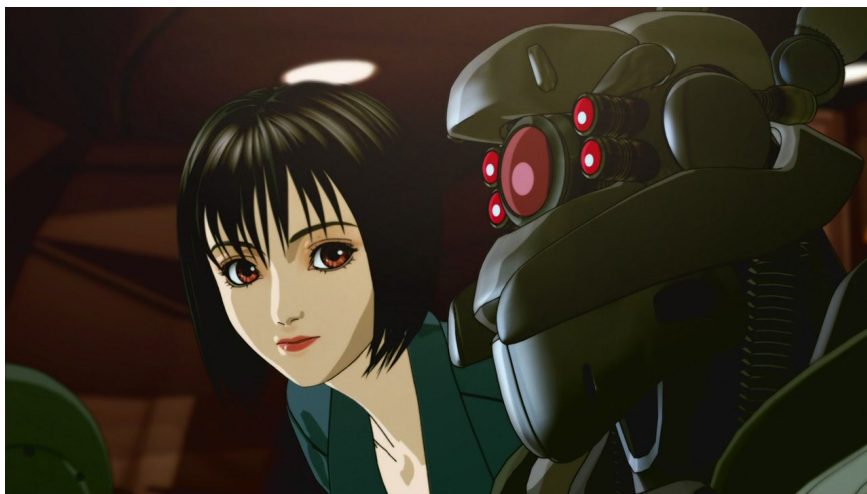


Fig. 3.15 *Appleseed* (2004) Movie capture.

The sequel, *AppleSeed Ex Machina* (2007), moves away from the conventional Cel Shading, getting a more realistic style, but still cel shaded. It tries to achieve its own artistic style through cel shading rather than imitate other techniques.



Fig. 3.16 *Appleseed Ex Machina* (2007) Movie capture.

Sometimes Rotoscoping is confused with Cel Shading, although the results may look similar, it is not the same. This is the case of the Movie *A Scanner Darkly* (2006), which most people think it is Cel Shaded. The rotoscoping process is based on redrawing live action film. It is not a 3D technique.

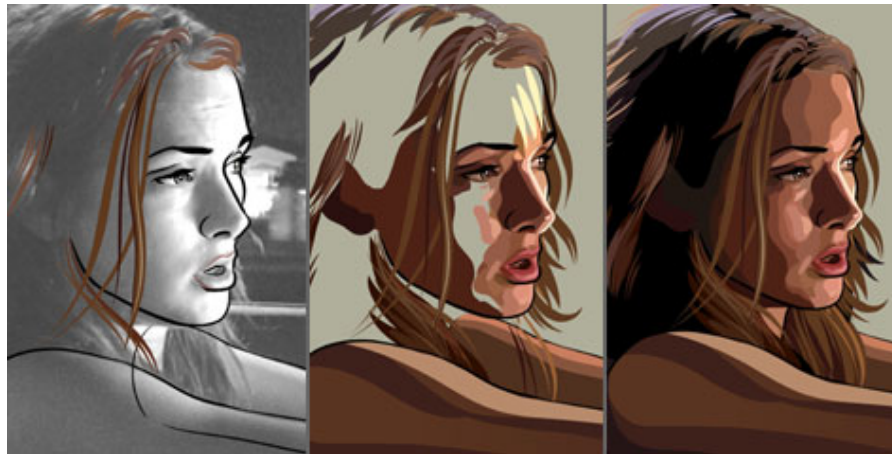


Fig. 3.17 *A Scanner Darkly* (2006) Rotoscoping process.

Studio Ghibli is a very well known Japanese studio that produces only 2D movies. But their latest films include some 3D elements hidden as cel shaded elements.

Sometimes is really hard to identify them because they are really highly integrated and implemented. Normally the cel shaded elements are backgrounds, buildings and non-organic elements.

On *Howl's Moving Castle* (2004) some parts of the castle are done using cel shaded 3D.



Fig. 3.18 *Howl's Moving Castle* (2004) Movie Capture.

3.3. Cel Shading nowadays

Cel Shading is getting popular, but not in all fields. Here I am going to describe the present situation exposing some conclusions about Cel Shading based on observation of the different productions through history and evolution of the technique.

3.3.1. Current Panorama

As we can see, Cel Shading is being used widely in the Video Game Industry. It works as a great technique used for full productions in very different artistic ways. It is also used for representing full short films, advertisements, and Tv cartoon series for children. Although is not a very popular technique, is employed to achieve specific visual styles.

But we cannot say the same about the Movie Industry. In this field the technique is used more like a secondary technique.

In 2D productions, is used to help in parts where the 2D hand drawn animation would be difficult and a waste of time, with the consequent loss of money. In the past the use of 3D

was really expensive for producers, but nowadays is not that expensive, using Cel Shading they save time and money.

In 3D productions is a very minor technique. Normally 3D productions use realistic render, recreating reality rather than searching for a 2D cartoonish visual style.

We can also see the technique used in some real action productions punctually, for representing a contrasting 3D that departs from reality.

There is a marked difference between the different fields.

3.3.2. Different Uses and Objectives

I observed that the reason of this difference between the uses of Cel Shading is due to the technique itself and the way the companies implement the technique in their productions to fulfil their needs.

With the arrival of the 3D era in Video Games, Cel Shading was really appreciated. In videogames, if companies want to represent the look of an animated 2D series, movies or “anime” Japanese style, the most appropriate technique is Cel Shading.

With the continued use of the technique, they improved the uses and arrive to great quality levels. They can do 3D games with all the advantages of 3D environment and gameplay, but with the look of 2D hand drawn animation in real time. In Video Game Industry this technique sometimes is a necessity to simulate specific graphic styles in a 3D environment.

But what happens with Cinema and Movies? Realistic shading is used on almost every 3D production, *Disney*, *DreamWorks*, *Pixar*, and quite a lot of others.

In the Movie Industry there seems to be no necessities of emulate 2D hand drawn animation with 3D. When they want to do a classic animation with the old hand drawn style, they do it. Like Disney did with *The Princess and the Frog* (2009).

Cel Shading is a complicated technique, when simulating 2D on characters they may look stiff compared to 2D hand drawn animation.

When a classical hand drawn animator makes a rotating view of a Character, it redistributes the mass on each frame, the Character will always look good in front of the camera because each draw is created separately.

But in cel shaded 3D, when rotating a Character view the 3D model will be always the same, it will not adapt to each frame. The 3D model is perfect and does not vary its from one frame to another, so it is very difficult to make the model look great from each view without modifying it.

That provides a stiff look, making the model look lifeless. Inevitably when we see this effect, we see that is stiffer than hand drawn animation, and lifeless compared to 3D realistic shading.

That is why normally Cel Shading is used to represent inorganic, lifeless or technological things.

Unlike 2D, 3D is perfect, it has no imperfections and lines and perspectives are just like there are in real life. Shadows look very fluid and they adapt shapes describing the exact 3D form of the models in a perfect way. It is not the proper behaviour of 2D animation, and that is why 3D is used with realistic render rather than other techniques.

Also, with this realistic render and aspect, nowadays animation films are well seen by adult audiences. In the past, 2D animation films were almost always catalogued as child's movies, and now, with this realistic shading and render, animation films are more addressed for all audiences rather than specifically for childhood.

That is another reason why this technique is not exploded in the Movie industry.

3.3.3. A Potential Technique

But this technique is not so limited, thanks to Video Games we have seen that the technique is really useful and can achieve amazing and very different artistic results.

In Video Games the technique has been perfected: imitating 2D animation with stunning accuracy, creating new graphic styles, giving life to different painting techniques like sumi-e or comic book style, and a great many others. And all with excellent results, creating gorgeous characters full of life, and magic environments.

In east, specially Japan, 2D animation and “anime” cartoon are very popular and we can see how Industry intend to improve and create 3D products based on Cel Shading in an appropriate way.

And more recently, Disney presented the animated short *Paperman* (2012) in which they used some of the best and most advanced techniques/software created by them to improve the Cel Shading technique, it results in a animation that looks incredible similar to the classic 2D Disney hand-drawn animation.

3.4. Good Cel Shading Employment

Normally Cel Shading is described and used just as a shading method. But it is more than that; in terms of production Cel Shading is not a simple type of illumination. If a production is going to be done in Cel Shading the production should be done in a certain specific way. Depending on the artistic style based on Cel Shading you want to achieve one production will differ from another.

It is a mistake to think that Cel Shading is only a lighting method which is applied just at the end of the production, the production has to be done in a certain way depending on which Cel Shading is going to be applied.

When a production is done in a normal 3D way and then applies Cel Shading, is when models look stiffer and not well prepared. The decision of make a Cel Shaded cartoonish appearance includes a lot of aspects that should be done in a specific way, modeling, animating, rigging, shaping, and so on.

3.4.1. Aspects to consider when producing in Cel Shading

With the analysis of both 3D and 2D animation, I have developed a guide with important aspects I thought are essential for simulating 2D toon style when using cel shaded 3D:

- With Cel Shading, volumes are almost non-existent due to flat illumination, so you have to make sure that your model is going to look right in all angles, taking into account the black outline that defines the character.

- When using Cel Shading for creating static frames, the technique is really powerful and very difficult to distinguish from a 2D paint, so for creating individual image pieces the technique is literally perfect simulating 2D.
- When animating, avoid exaggerated 3D camera movements and use static and more traditional camera shots.
- When animating Cel Shading in a 2D simulation way, you have to think on the way 2D hand drawn animation is done. You have to change shaping of your models and redistribute the mass depending on what are they doing and in which angle they are being shown.
- Try to animate the most traditional way possible, using frame-by-frame, and less interpolations.
- If using black outlines, try to modify the volume of those on different parts, avoid same sized perfect outlines. Using thicker outlines will guide viewer through important parts.
- Render and export animation with classical hand drawn animation 12 frame per second pattern. Double frames to achieve the 24 frames per second cinema ratio. With a higher number of frames per second, animation will look smoother like reality instead of 2D classic animation.
- Do not use Motion Capture for character animation. It will ruin the classic animation look, giving to the animation inappropriate 3D realistic smooth movements.
- Make Simple characters, 2D designs are quite simple due to the difficulty of hand drawn animation. So a character full of details will look digital and 3D in contradistinction to 2D traditional animation.
- Take control of lights and spotlights. Shadows with constantly movement and adaptation through model shape will reveal the 3D.
- When doing outlined Cel Shading, change and add lines depending on the scene and the action performed by the character, sometimes when animating 2D characters lines appear and disappear depending on the action they are performing, a 2D animated character does not have always the same amount on lines in the same place.
- Sometimes flatter lighting is better, because with lot of gradient tones, the image will look more as real 3D with posterize effect rather than 2D animation.



Fig. 3.19 Posterized photography.

3.4.2. Cel Shading in its own way

Also, Cel Shading can be employed as a technique itself without the 2D simulation factor. Looking like 3D but in its own creative and artistic way. A clear example is the aforementioned *AppleSeed* (2004), and its sequel *AppleSeed Ex Machina* (2007).

The first movie uses "Cel Shading" in a 3D flat colored way. With a slightly stiff aspect and a lot of detailed digital effects, it does not achieve a 2D traditional look neither a 3D realistic style. Referring to human characters is not a proper use of Cel Shading. It contains some errors that I mentioned in previous section making characters look stiff and lifeless. The biggest obstacle of the movie is that combines 2D cartoonish-look with motion capture, two techniques somewhat incompatible.

But in the 2nd Movie Cel Shading is used in its own artistic way rather than trying to look like other techniques, achieving a really good looking Cel Shaded artistic style with the basis of the first film.

In Figure 3.20 I have made a comparison between the same Character in both movies. On the left an *Appleseed* (2004) capture, and on the right an *AppleSeed Ex Machina* (2007) capture. We can see that in the first movie the character looks stiffer and lifeless comparing to the sequel. Movement emphasizes this sensation.

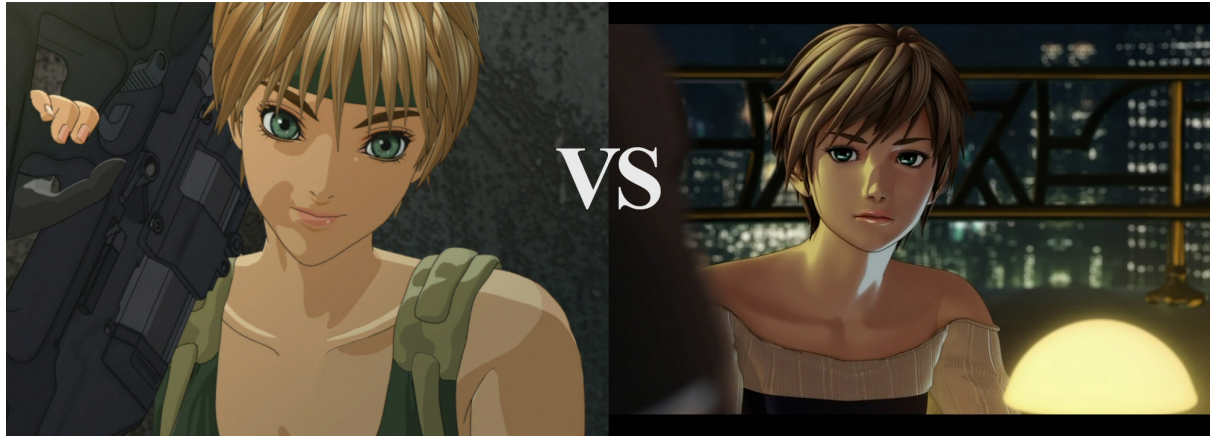


Fig. 3.20 Appleseed Comparison.

3.5. How Cel Shading works

Cel Shading is not as technically complex as other techniques, in fact is not so complex. As I mentioned before, the difficulties of getting a good use of the technique entails some other aspects you have to include during the production. But here I will analyse the technical behaviour of the technique itself.

3.5.1. Shading

The effect is generated from object's normals. Each normal has its own angle, which is determined between its direction and the lighting point. It calculates the respective cosine and applies a specific tone to that faces/area. When both normal and light directions match, the tone will be brighter. When directions mismatch, the angle increases and the tone will be darker.

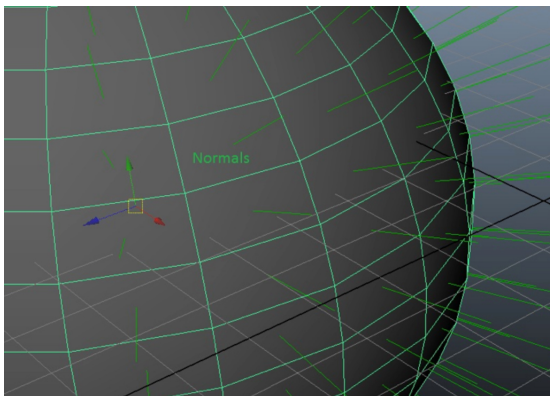


Fig. 3.21 Normals of a 3D Object.

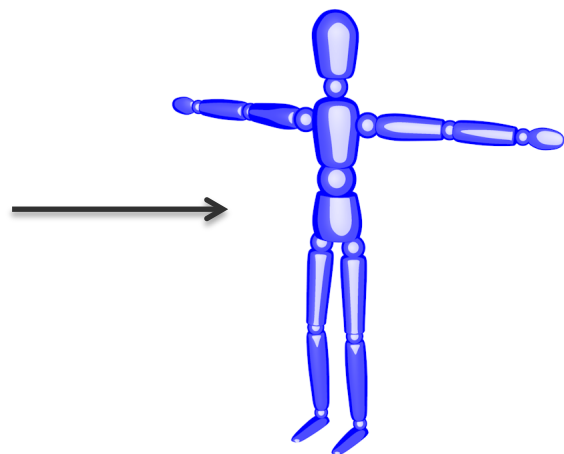


Fig. 3.22 Cel shaded 3D Model.

The different tones are flat and change without gradients, simulating cell/acetate painting style. Depending on the style, the number of tones can be increased or decreased.

3.5.2. Outlines.

To achieve cartoon look sometimes Cel Shading graphics include black outlines simulating drawing strokes, this outlines are generated by different techniques such as “Edge-detection” or “Back-face culling”.

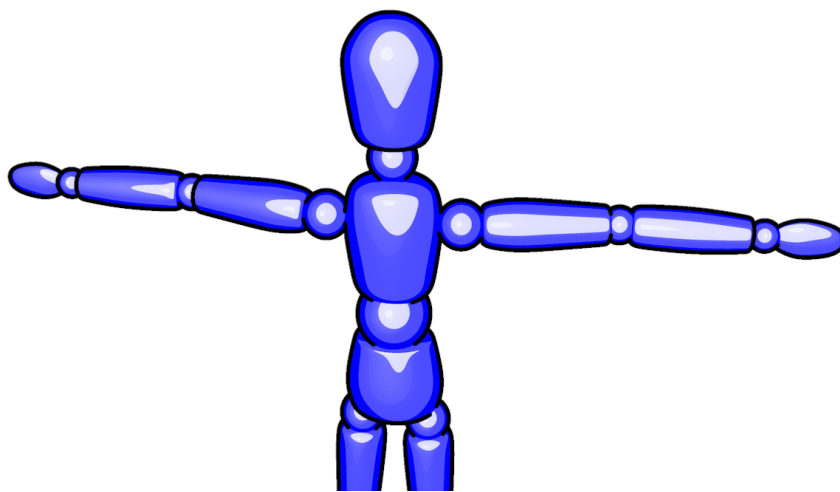


Fig. 3.23 Cel shaded and Outlined 3D Model.

“Edge-detection” or “Back-face culling” are two independent techniques, but due to the fact that they are used almost always in combination with Cel Shading, it is common to see those techniques encompassed under Cel Shading technique.

Edge-detection is based on algorithms that detects changes of contrast, bright, and sharpness, determining where are the points that form object edges inside an image. The technique is a post process so is not limited to 3D. It is not the most used technique for outline 3D contents.

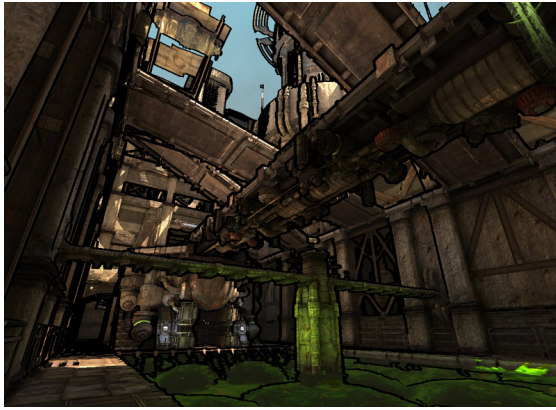


Fig. 3.24 Outlined image by Edge-detection from Unreal Developer Network.



Fig. 3.25 Outlines of an image by Edge-detection from Unreal Developer Network.

Back-face culling is used for hide back non-visible 3D elements, or part of them, in all kind of 3D programs. It hides the elements that are not visible from the point of view of the observer/camera. These hidden elements of the back do not appear in the final render.

For generating those outlines, the technique is inverted for showing to the observer/camera the hidden elements. Those elements are showed as colored vertices/faces. To make the lines thicker, the vertices/faces are reproduced and translated several times, producing a black outline through the entire object. Then the shaded object is reproduced in front of the black amount of vertices, calculating which are the faces that stay in front, achieving these black outline effect with the hidden back faces.

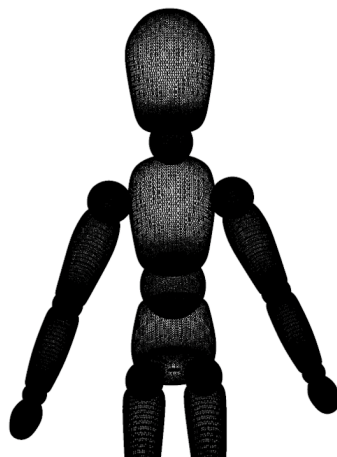


Fig. 3.26 Back elements in Black.

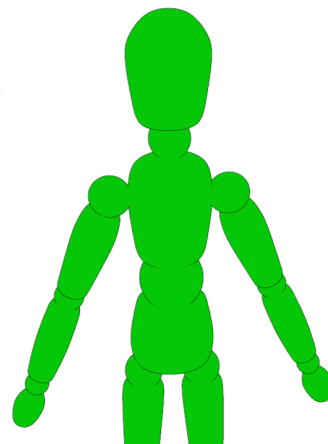


Fig. 3.27 Back elements + Shading.

3.5.2. Texturing.

Texturing to achieve cartoon or pictorial style is based on using textures specifically created with this purpose. Including black lines in textures or painting them in a traditional way with brushes and visible strokes. Programs incorporate specific shader functions to include your own artistic textures.

One example is the "Art Shader" of Cinema 4D, where you can import textures and use them as normal spherical materials. I have painted a texture on ArtRage for the example of Figure 3.29.

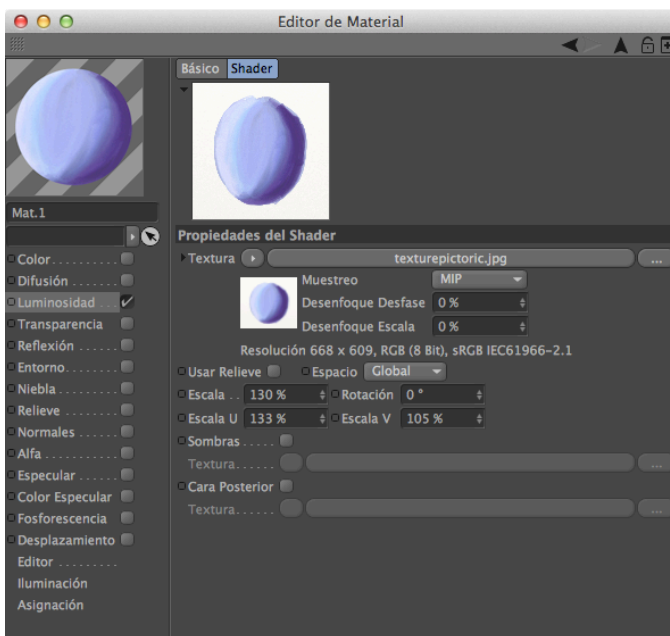


Fig. 3.28 "Art Shader" on Cinema 4D.

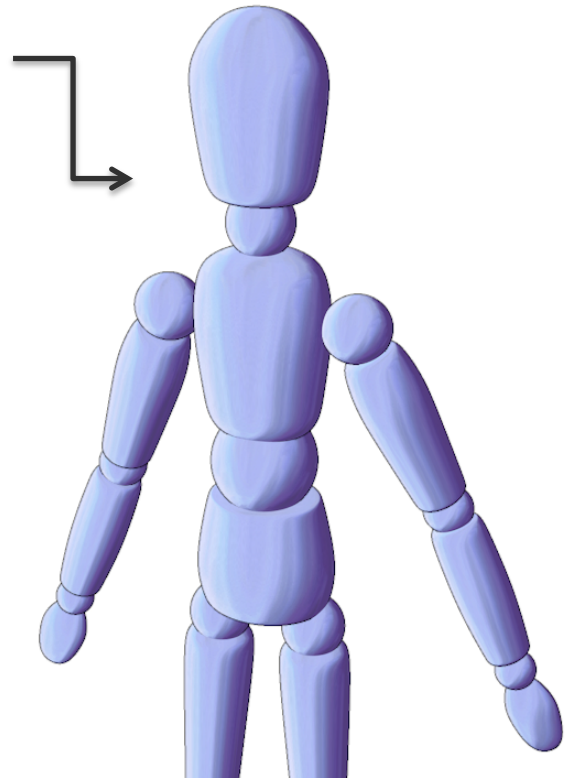


Fig. 3.29 Artistic texture on 3D model.

3.6. Types of Cel Shading

Based on the observation of different productions that employ Cel Shading, I will test and classify different types of Cel Shading applied to the same 3D elements for comparing them.

I have modeled a basic character and a scenario for testing the different typologies. I modeled the character with simple shapes in order to achieve a good Cel Shading performance. I have done all the tests with the use of “Sketch and Toon” Module of Cinema 4D, is a very powerful module with very advanced settings. I used different texturing methods in combination of the "Sketch and Toon" module for some of the renders.

You can found all the tests and classifications under the “Annex II” section. They are too extensive to include in the body of the work. On Figure 3.30 you can see one of the most significatives tests for the development of my project:



Fig. 3.30 Artistic Render Scene.

The possibilities with the outlines are almost endless; there are very many options and settings you can control to create your own perfect outline depending on the style you want to achieve. Also you can animate the outlines creating a live sketching style.

3.6.1. Materials.

On Figure 3.31 you can see a basic cel shaded tri-tone material:

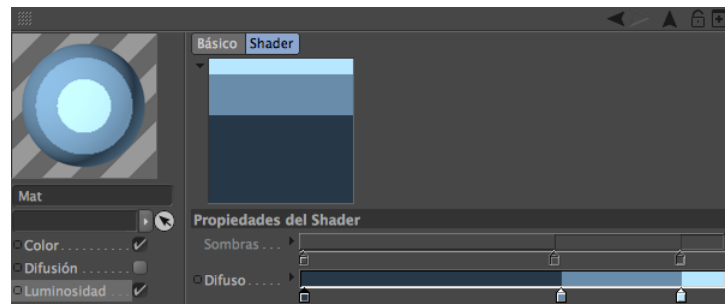


Fig. 3.31 Cel shaded Material.

On Figure 3.32 you can see a Sketch Material, where outlines are modified:

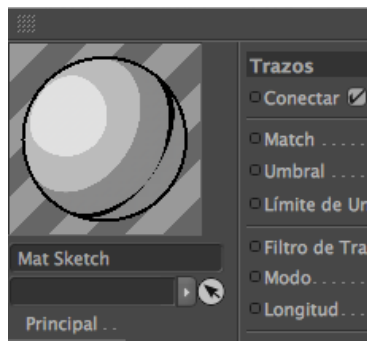


Fig. 3.33 Sketch Material.

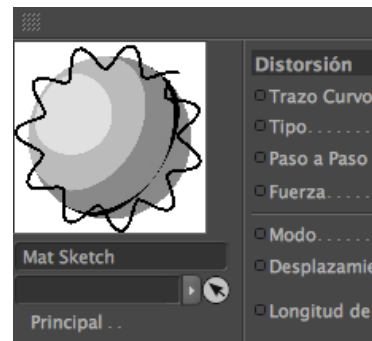


Fig. 3.34 Wooble Sketch Material.

And in Figure 3.35 you can see some of the “Artistic Shader” materials, which I have painted in Artrage Studio:

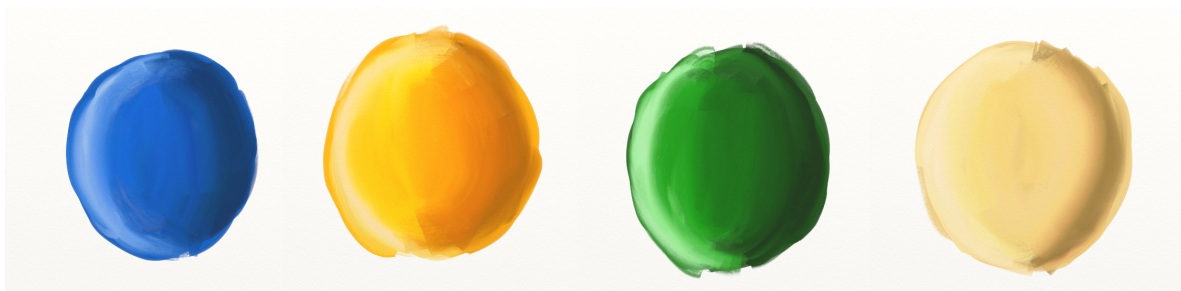


Fig. 3.35 Artistic Shader Materials; Shirt, Trousers, Ground, Skin.

I also made other tests with some old elements I have modeled some years ago, to see how Cel Shading interacts with elements not modeled with the aim of apply Cel Shading.

You can see this other tests I have done at the end of the “Annex II” section.

3.7. Conclusions about Cel Shading

After all the research and investigation, I have noticed that Cel Shading is a very complicated technique, much more than I thought.

Before doing the research I thought I knew the technique fairly well, but in fact I was losing so many things.

After doing all the tests and analyse the technique, I realized how hard is it to control and achieve good results. Doing tests has helped me to understand by myself what I have been researching, the hardness of the technique.

Analysing which are the differences between 3D Cel Shading and 2D animation, I realized which are the strengths and weaknesses points of Cel Shading.

Cel Shading requires a very specific production if want to look as 2D cartoon. It is not just a filter you can apply at the end of the production, you have to consider the style through all the aspects of the production, for achieve a good-looking Cel Shading.

Investigate and compare the different uses of Cel Shading has made me see and understand why there are wrong Cel Shading uses and good Cel Shading uses.

Like I proved in the tests Cel Shading works great with simple Characters, but with detailed Characters the results are imprecise and dirty.

Unlike in other techniques as Realistic Shading, in Cel Shading is very hard to achieve good-looking results. With Realistic Shading the results are very good with less effort.

Cel Shading is not a widely appreciated technique, some people see Cel Shading as an under-technique compared to Realistic Shading. Some audiences do not understand the technique and think that is simple and childish.

As I have observed throughout research, Cel shading is a technique that it still has to go a long way and has not yet been fully exploited. But some Video Game studios have achieved an amazing use of the technique with amazing results, now I appreciate much more those Video Games that use Cel Shading so flawlessly.

After all the research and testing, I think that the most appropriate type of Cel Shading for my project is the Artistic Shader. I want to make my animated short with a sketchy and artistic look, with no perfect lines and paints. I want to make the strokes and the colors that form materials visible. And after testing I thought this is the best shader for achieve that look. And I thought that it is a shader that complements very well which the painting software I am using, ArtRage.

4. Pre-Production

Here I will document all the process of the Pre-Production section of the Project.

4.1. Devolving the Idea

The development of the idea started on July 2012, in Gylndwr University. Teachers ask us our first ideas in order to start working on them.

The first idea was to create some kind of Middle Age magic story, with kind of VideoGame feeling.

I started to draw something for getting ideas. And based on the idea of a magic middle age story, I created a Monster, who kidnaps sister's main character.

And then I start to think about that monster, his personality and the reasons why he kidnaps that little girl. You can see this first sketch in Figure 4.1.



Fig. 4.1 The Sister, trapped in the crystal, the Monster, and the Main Character.

The Monster would have 40 years, and he would been created by a wizard because the kingdom kings are not allowed to have a child. They want a little boy, but the magic goes wrong and instead of a normal boy they obtained a Monster.

The Monster would want a sister, because he is confused, he plays things that other boys does not play.

The Monster has no friends, but, in secret, he kidnaps little girls and transforms them into dolls for playing with. That is why he kidnaps the little sister of the Main Character Girl which age is 20.

After that, I realized that the story was getting a humorous tone and I wanted something more serious and epic. I started to think in other type of “monster” and then was when I thought about the “Black Knight”. And through the creation of the Black Knight, the first outline of the final story came out.

4.1.1. First Story Outline

Focusing on the description of the Black Knight character, I created the first story outline:

The Black Knight was the heir to the throne, but he was too naughty and disobedient.

One day the king left the Kingdom for doing an important political travel, and gave the command of the Kingdom to his son, the Black Knight.

During the king’s absence the Black Knight committed a lot of atrocities, and when the king returns, he exiled the Black Knight.

Then he becomes a very bad person and a hermit, living alone in the mountains, and going down to loot and stole things to the citizens and the people of the villages and the farmers.

The Black Knight is so lonely and his unique purpose in life is to defeat the king, his father, and control the kingdom.

The story of the short starts with a book telling the prophecy of an ancient race capable of transform in horrible beasts with an amazing destruction power.

The fact is that the Main Character, the Girl, and his little sister, were the two unique living descendants of that ancient race. They live in the forest apart from the normal people, doing her live normally.

But one day the Black Knight realizes that the Girl and her sister were descendants, and he plans to kidnap the little sister and use his unleashed power to beat the King and become the master and lord of the Kingdom.

He plans to kidnap the little sister because he knows that the Girl have control over his powers, unlike his innocent little sister, which is still just a kid.

The Knight would kidnap the little sister, and the Girl would become involved in an adventure to save her little sister and preventing the Black Knight to ruin the Kingdom.

4.1.2. References

The references are so important in the creation process of the idea, I always have so many references in mind, and even though when I am not thinking on them consciously they come to my mind. When I am thinking on the feeling I want to give to my animated short references play an important role.

These are some some of the sources that are inspiring me to create the project.

First, I love the visual style of the movie *Tangled* (2010) from Disney, my drawing style is cartoonish so I feel a lot of attraction for that kind of productions. Also Tangled combines really well the cartoon style of the characters with a more realistic environment.

I bought a book specially to help me with the character and scenarios design on the project. It has lots of useful information. The book is called “The Art of Tangled”.

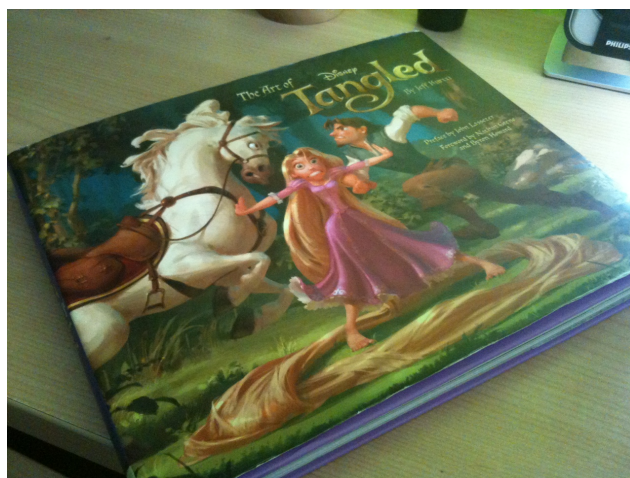


Fig. 4.2 The Art of Tangled Artbook.

The character designer of *Tangled* (2010) is Glen Keane, who has worked designing characters in a lot of Disney movies, such as *Tarzan* (1999), *Pocahontas* (1995), *The Little Mermaid* (1989), etc.



Fig. 4.3 Glen Keane.

I really appreciate his art and is a really strong inspiration for me.

In my animated short want to make a middle age style similar to *Tangled* but a little darker and serious.

As I said previously, I want to give to my project kind of video game style, I would talk about some of the influences that inspire me.

I want to give to the short a strong adventure look, the adventure aspect will be similar to “The Legend of Zelda” game series, with exploration, dungeons, great and evil Monster, and a bit of magic involving all together. When I am playing “The Legend of Zelda” games I feel like there is a whole world to explore, a very fantastic place which its full of life.



Fig. 4.4 *The Legend of Zelda: Ocarina of Time* (1998) In game capture.

I want to give that adventure and “little character vs great world and evil enemy” feel to my project. Also in *Zelda* the main character Link have to save the Princess, which is similar to my idea.

Although my project will use 3D and 2D, a great inspiration of that kind of Graphic Novel look that I want to achieve are the cut scenes of *Metal Gear Solid: Peace Walker* (2010).



Fig. 4.5 *Metal Gear Solid: Peace Walker* (2010) Cutscene capture.

I would like to make something like this but combining 3D and 2D. Also my plan is to do it in full color, and without the comic styled paint.

A great inspiration for creating the tough, brave and confident main character's personality was the one's from "San", from the Movie *Princess Mononoke* (1997) created by Studio Ghibli. But my character will be more "human" and compressive, not a wild self. My character has wild powers but she knows how to control that, unlike her little sister, which is too young for that. This movie it also gives me the inspiration of creating epic beasts and story.



Fig. 4.6 *Princess Mononoke* (2004) Movie Capture.

Hayao Miyazaki is the most active director of Studio Ghibli, and his movies have a lot of fantastic and amazing aspects that are very inspiring for me. The plots are magic and original, and he makes films that adults and children can enjoy, because depending on your age you will see the movie in a form or another, enjoying it no matter how old are you.



Fig. 4.7 Hayao Miyazaki.

These are the strongest references and its main points. They are influencing the development of my idea and my project.

4.1.3. Creation of the Trailer

During the first stance in Wales we had to make a Trailer of our Projects in order to practice with Story Board, Animatic and start setting the artistic style of the Project.

I used Toon Boom for the Storyboard and Animatic, and I have done the final product with ArtRage, Adobe After Effects CS5.5 and Adobe Flash CS5.5 for frame-by-frame animations.

Within the realization of this Trailer I outlined the design of some characters and scenarios, although there are some scenes of this trailer that are not present anymore in the Final Project. The lacking of these scenes is due to when they ask us to do the Trailer we have not finished the complete storyline of our projects yet.

The Trailer was also useful to create and start setting the colors and features of the artistic style of the project. The Animatic was re-done several times in order to change some scenes and timings.

Although the Final Project will combine 2D and 3D, this Trailer is all made in 2D due to time limitations. The entire production of the Trailer was done in only one week.

In the “Annex III” section you can found all the material created for the Trailer: Story Boards, Sketches, etc.

4.1.4. Definitive Story Line

After developing ideas, thinking, comparing, merging and changing, I have done the definitive Storyline, it has evolved increasingly since the first idea. The different teachers of Glyndwr have helped me a lot to give sense to all the aspects of the plot, and they give me very good ideas. They help me also with some contradictions. Talking about the project with the others classmates has helped me too. I am proud to be creating a small Universe. Sometimes new ideas come to my head, enlarging this tale world. Here is the complete Storyline of the Animated short:

Storyline

The Story begins by explaining the legend of an ancient race, which used to live in floating Islands. This is explained by an illustrated book in which pages are turning.

The Story explains that this ancient race has the ability to transform in mythological giant beasts with unleashed power, when they transform they lose control and become really savage.

They transform into beasts when they see a specific purple mineral, which radiates a strong purple light.

When the people of that ancient race grow older, they learn how to control those powers, to avoid transforming into those savage beasts.

The stories say that long time ago, that civilization fell, and only some survivors of the ancient race survived, but it is a legend.

Nobody knows if the legend is true or not, but that purple mineral does exist on earth.

After years and years, the only two survivors of that ancient race are the Main character Girl, and her little sister. They live alone in the forest, and no one knows that they are descendants. They live in peace and have normal lives; sometimes they go to the citadel to buy things, and commerce. They have purple eyes so when the eldest sister goes to the city she goes with a hood to hide her eyes, like a cloak.

This is the past, a flashback; here I will use a time ellipsis (show his story condensed).

We see the black knight as a young boy, looking at the book.

The Black Knight Story:

He was the heir to the throne, but he was too naughty and disobedient.

One day the king left the Kingdom for important political travel and gave the command of the Kingdom to his son, the Black Knight.

During King's absence the Black Knight committed many atrocities, when the king returned he exiled the Black Knight.

Then the Black Knight becomes a very bad person and a hermit, living alone in the mountains and going down to loot and steal things from the citizens, the people of the villages and the farmers.

The Black Knight is so lonely and his unique purpose in life is to defeat the king, his father, and control the kingdom.

Now we are in present time, the ellipsis finish.

One day the Black Knight, returning from looting, realized that the Girl and her little sister were descendants.

The eldest sister trains with her little sister to teach her how to control that powers in front of a small purple crystal, and that is when the Black Knight saw them, then he pieces things together, and discovers that the legend he used to read as a young boy is in fact true, and the Girl and her little sister are two descendants of that ancient race.

Then he plans to kidnap the little sister and use her unleashed power to beat the King and become the master and lord of the Kingdom.

He manages to get purple mineral; he goes into the dark mountains and finds an immense mine, with a great purple mineral rock, we see the face of the Black Knight illuminated by the purple light. After that he goes to kidnap the little Girl.

He plans to kidnap the little sister because he knows that the eldest sister has control over her powers, unlike her innocent little sister, who is still just a kid and is still learning how to control it. The Black Knight can transform the little sister into a beast very easily with the purple mineral.

He wants to get the sister into king's castle and make her transform into that giant beast, to destroy king's castle and army, and gain control of the kingdom.

Then the black knight kidnaps the little Girl. Short time after, the eldest sister realizes that her little sister is not outside the house, and she goes to the mountain and sees from the

distance, the black knight dragging little sister, and quickly she starts running to save her sister.

It got dark, and after lots of running, she realizes that the black knight is going to king's castle.

Due to the fact that Black Knight used to live in the castle when he was young, he knows a secret entrance behind the castle.

The eldest sister sees that, but when she tries to enter that secret passage she cannot open it.

Then she goes to the main castle's door, and talks with the guards for open the door. She explains what is happening, but the guards do not allow her to get inside, they ignore her and tell her that if she wants to enter she has to wait until tomorrow and make a formal appointment.

The Girl tries to find a way to enter the castle, she sees a man riding a carriage of goods waiting to enter into the castle, and she empties one of the barrels from the carriage and gets into it.

The Girl infiltrates the castle hidden in the barrel and she sneaks past the guards. She is looking for the Black Knight and she sees him in the top of a tower, passing in front of a window that has light inside.

The Girl arrives to the room where the Black Knight is, and she sees her little sister chained.

Then, when the eldest sister is approaching her little sister to save her, suddenly a great cage falls from the roof, trapping the eldest sister.

The Black Knight really wants the eldest sister, and the little sister kidnap's was only a trap for getting the eldest sister into the castle.

Then the black knight reveals a giant purple crystal of mineral with a lot of power to make the eldest sister, who is stronger than her little sister, transform into a beast.

The light of the giant mineral is too strong, and the eldest sister tries to control her beast transformation, but is too hard for her due to the very strong light. They always train with little crystals of that mineral and this is too big and powerful.

Then the little girl, who has reacted before to the crystal because she is younger, transforms into a beast and gets released of the chains.

While the Black Knight is laughing cause he is looking how the eldest sister is trying to stop the transformation, suddenly two purple giant eyes appears behind the Black Knight. It is the little sister transformed into the beast.

Then the little girl knocks out the Black Knight and hits very strong the Giant purple Crystal.

The Crystal begins to crack and crashes in a lot of pieces. The magic power inside the enormous crystal, makes a shock wave that finish crashing all the little fragments into purple dust, like shiny magic dust, which falls, and feels really magic and calm. Then the eldest sister stops the transformation into a beast.

The Little sister gets back to her normal form, and the King and his guards enter to the room attracted by the great magic explosion. The King orders the guards to arrest the Black Knight.

The King looks at the eldest sister, and with happiness invites them to enter the castle. But the Girl refuses the invitation with grateful expression, they have to return to the forest, it is her place.

The Girl and her little sister return home, relieved and happy because at the end everything has ended well and the king is keeping her secret safe.

During the credits we see some shots of the Girl's continuing her live happily, and some shot of the King visiting them in the forest.

4.2. Storyboard and Animatic

After doing the complete Storyline and being reviewed by my Glyndwr teachers, I started doing the entire Storyboard of the complete animated short.

I have also done the entire Animatic. The timings were quite good, but I have adjusted and polished some of the timings after the review of the teachers.

I have done all the drawings with ArtRage, and I have done the Storyboard and Animatic with ToonBoom Studio.

You can found the Storyboard of the whole animated short and the Animatic under the “Annex IV” section.

4.3. Characters Design

I have done designs, expressions, descriptions and data for all the Characters. Here I will show them presented into the professional format. You can also found rejected designs of every character under the “Annex V” section.

4.3.1. Keira

a) Description and Data

Keira is the main character of the story. She is a young woman who lives with her little sister in a small house in the forest. Along with her sister they are one of the few descendants of the ancient race.

She dresses with a turquoise and blue dress, with the clothing style of their ancestors. She has to look after her little sister and teach her how to control the powers as their ancestors did with their child. She has full control over his powers so she is so strong and has incredible skills due to the powers. Both she and her sister loves nature, it is part of the ancestor's culture.

Role: Protagonist/ Main Character

Age: 20 years

Gender: Female

Height: 1.70 m

Weight: 67 Kg

Personality:

She is Kind, brave and sympathetic. She is also smart and a bit overprotective with her sister, because she is still too young to control her powers.

Relationships:

She is related with her little sister and she also know all the people of the Village. She have listened stories about the Black Knight but she does not know the King or his son the Black Knight.

b) Character Design

When designing Keira, I wanted to create a powerful and athletic character, but also a beautiful and feminine woman. First designs of Keira's face weren't so feminine, so I modified her face to make it finer.

I tried the option of highlight her lips drawing them but I don't like the aspect it gives to the Character. Due to its shape in the 3D model the lips will highlight without being extremely marked. When drawing lips she looked weaker in a certain way, I do not know the exact word but it wasn't representing her true personality so I rejected the design.

The hair was also an important part of the character, depending on the hair the personality of the Character varies. After different sketches, I decided to create a long mane, which represents strength and life. I have designed the hair in order to keep the face of the character uncovered.

I used a triangle shape over all the design, the Hair, the Dress (the skirt, V-neck). I used this V form through all the designs, especially on the clothing of the different Characters.

I created the character barefoot because she lives in the forest and she is used to walk without any kind of shoe.

I used a cartoonish drawing style for representing the Character; I love this style and it works really well with 3D models.

Three-Quarter View:

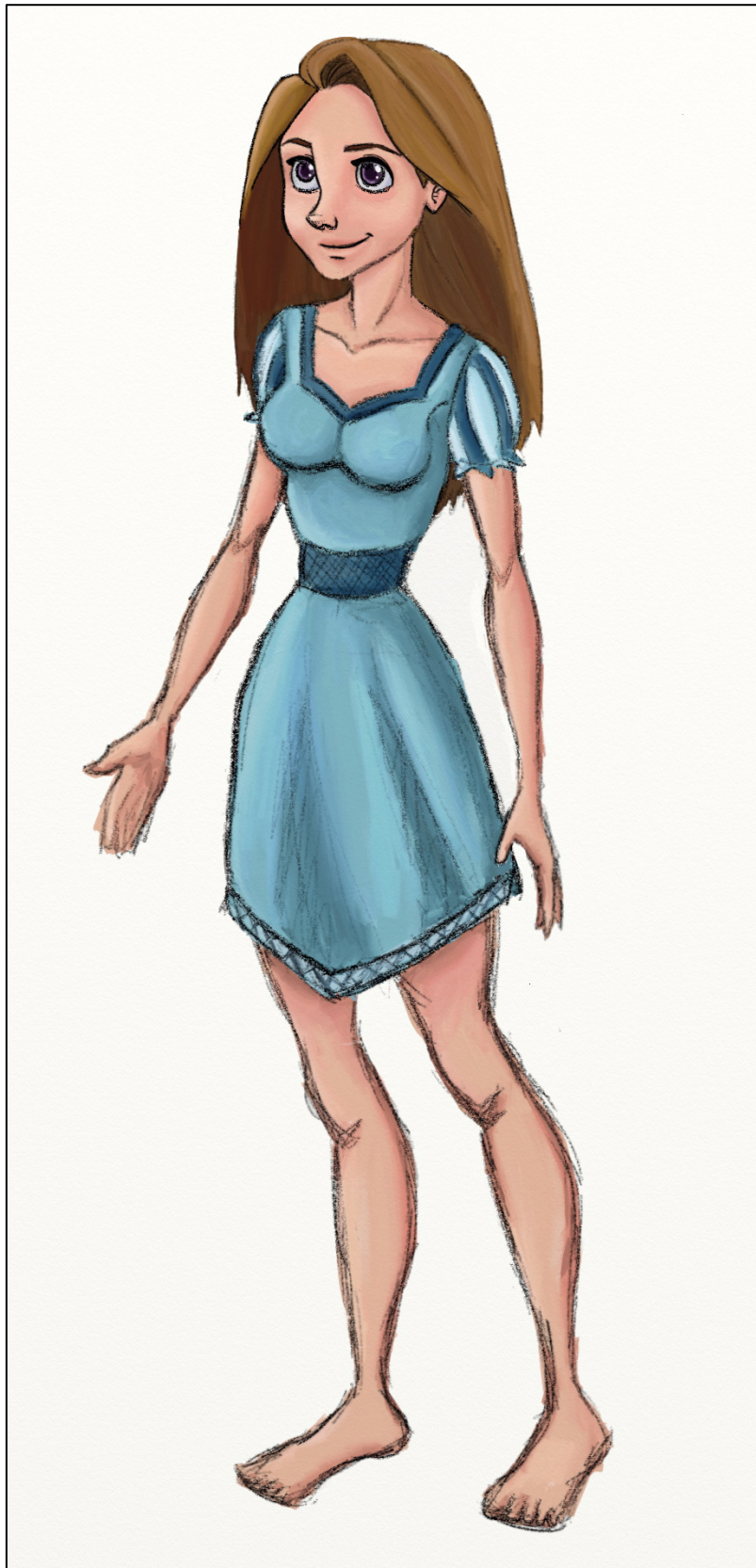


Fig. 4.8 Keira three-quarter view.

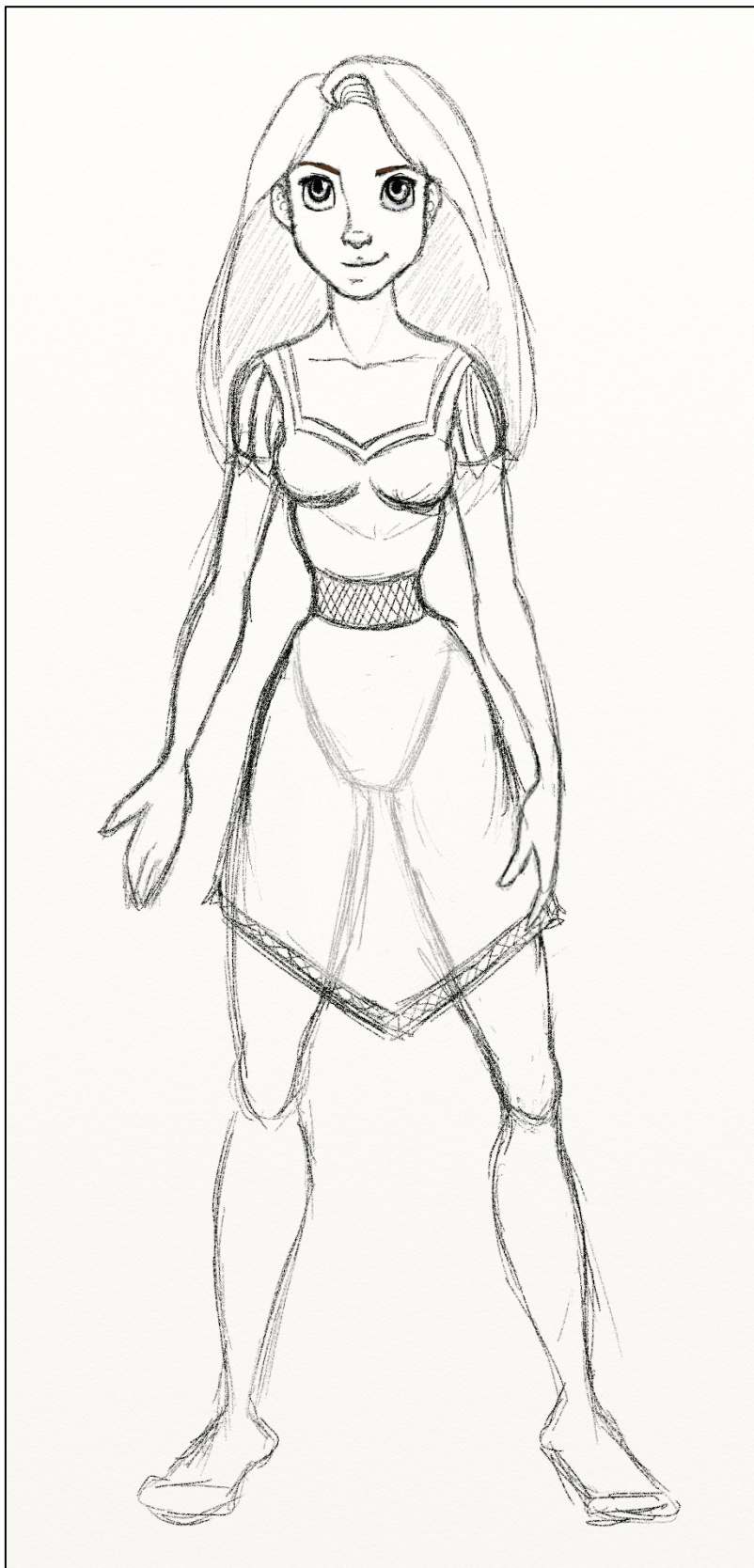
Front View:

Fig. 4.9 Keira front view.

Profile View:



Fig. 4.10 Keira profile view.

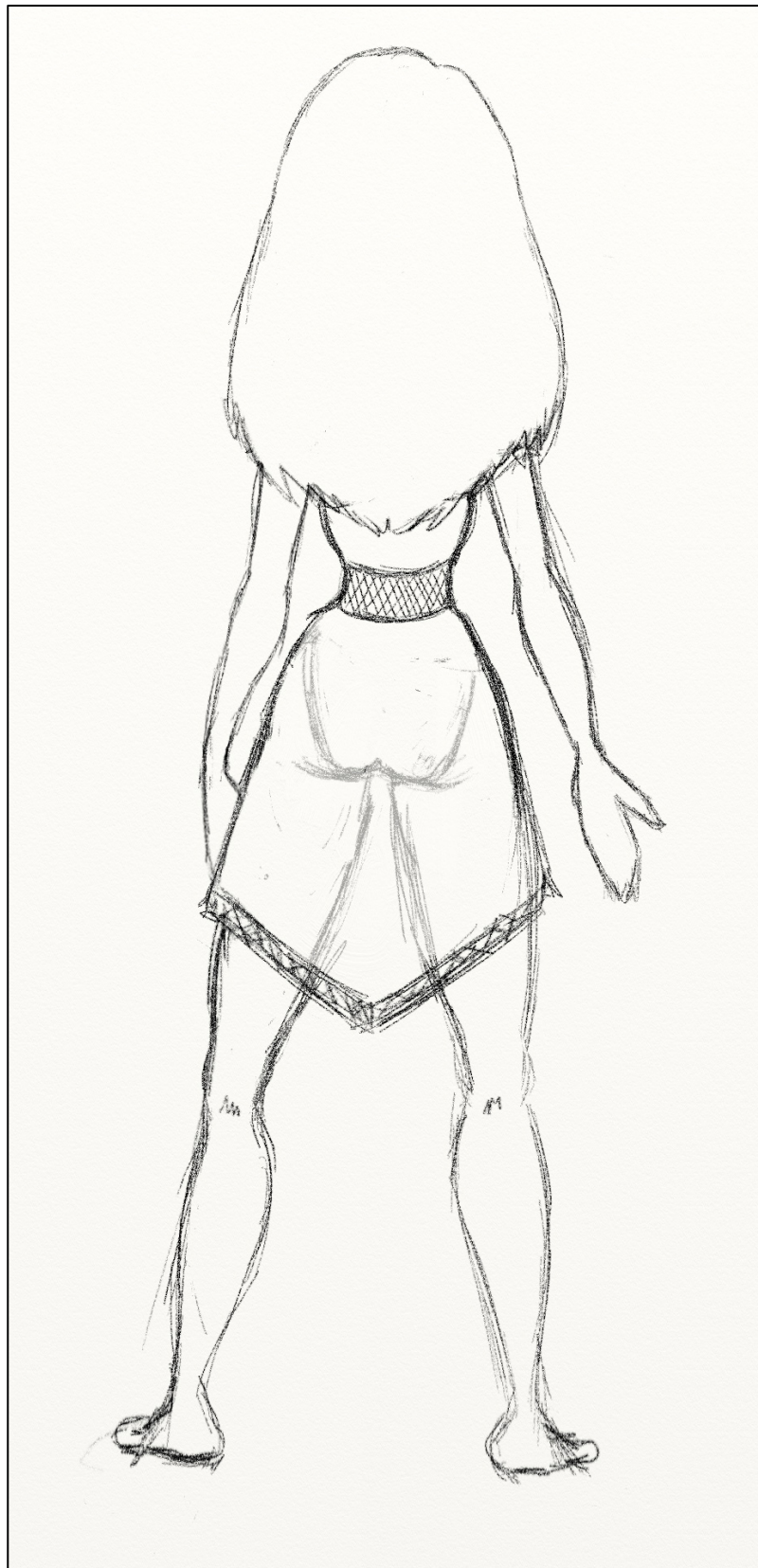
Back View:

Fig. 4.11 Keira back view.

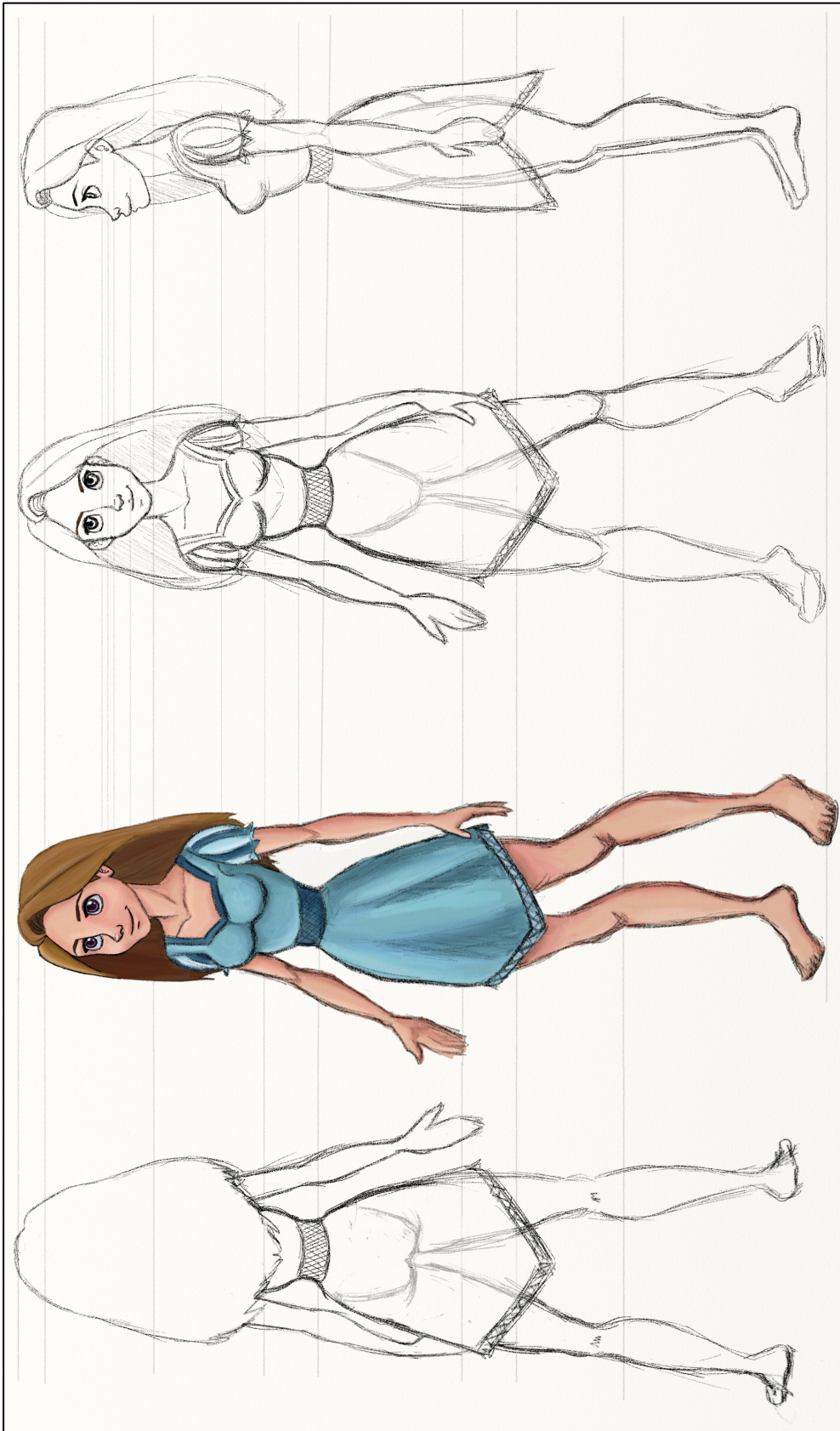
All Views:

Fig. 4.12 Keira all views.

Colors:

These are the main flat colors of the Character. Shadows or bright tones are not included.

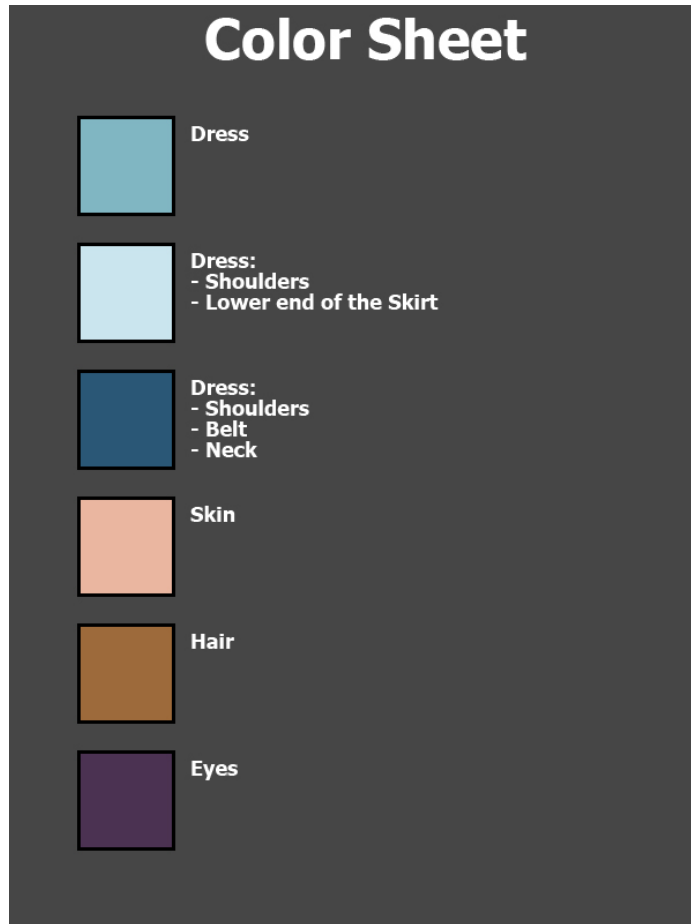


Fig. 4.13 Keira Color Sheet.

Clarifications:

Both sides of the Skirt have a little “triangle”, you can see this on Figure 4.14.



Fig. 4.14 Keira skirt detail.

c) Character Expressions

All Views: On Figure 4.15, Top-Right: Angry – Top-Left: Happy – Center: Neutral – Bottom-Right: Surprised – Bottom-Left: Sad.

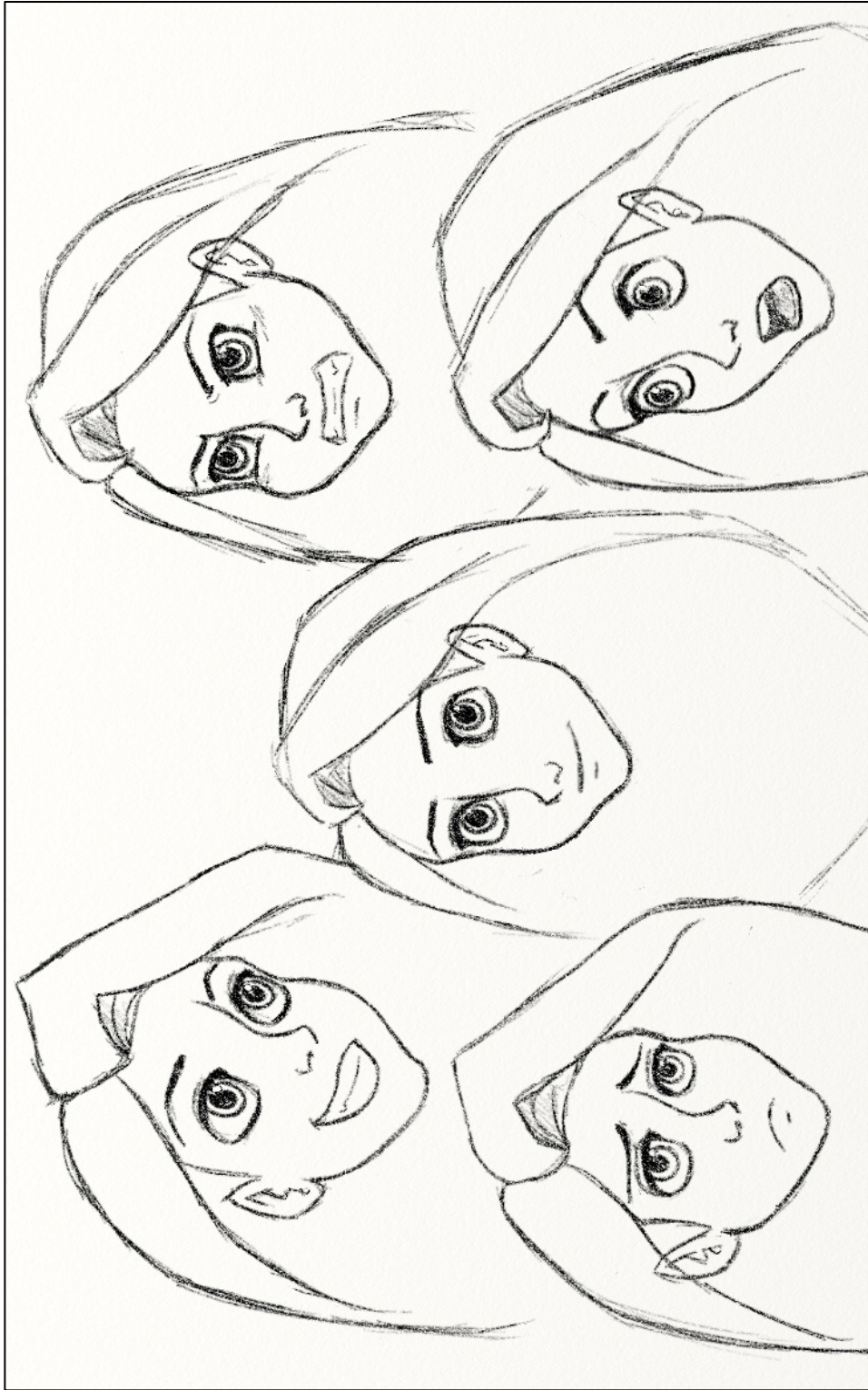


Fig. 4.15 Keira all expressions.

4.3.2. Kaylee

a) Description and Data

Kaylee is Keira's little sister. She is a little girl who lives with her eldest sister in a small house in the forest. Along with her sister they are one of the few descendants of the ancient race.

She wears a fuchsia/purple dress; it is the traditional colour for child who does not have control over her powers yet. She has to train to learn how to control her powers; Keira helps her to achieve that control, like their ancestors did. She is dangerous, because without control she transforms into a beast when she is in front of a purple stone.

Role: Main Character

Age: 8 years

Gender: Female

Height: 1.14 m

Weight: 25 Kg

Personality:

She is a child, so she is naive. She is a bit fearful but brave in key moments.

Relationships:

She is related with her eldest sister Keira. She does not know many people due to she cannot control her powers so she cannot leave the forest; also she is still too young. She have listened stories about the Black Knight but she does not know the King or his son the Black Knight.

b) Character Design

When designing Kaylee I wanted to create a naive little Girl, happy and carefree. On Kaylee's first designs she seemed older, so I modified it to give it a childish and naive aspect.

An important point in the design was to make her similar to Keira because they are sisters. I don't wanted to create a little version of Keira, my objective was to make visible that they both are sisters with the use of little common details.

Kaylee's hair is shorter than Keira's hair, making a difference, but the colour is the same linking the two sisters. Kaylee has purple eyes like his sister, because they are both descendants of the ancient race. As well as her sister, I created the character barefoot because she lives in the forest and she is used to walk without any kind of shoe. Kaylee's skin colour is the same of Keira's but a bit changed due to age differences.

Kaylee's dress also has different triangle V-shapes over his dress, at the Skirt and at the neck. I decided to change dress colors because they were darker in the first version. In the final design the colours are lighter which matches better with Kaylee's personality.

Also, the new colour scheme is simpler and more harmonious, which matches with Keira's colour scheme too. Their clothes had to be similar because they proceed of the same source.

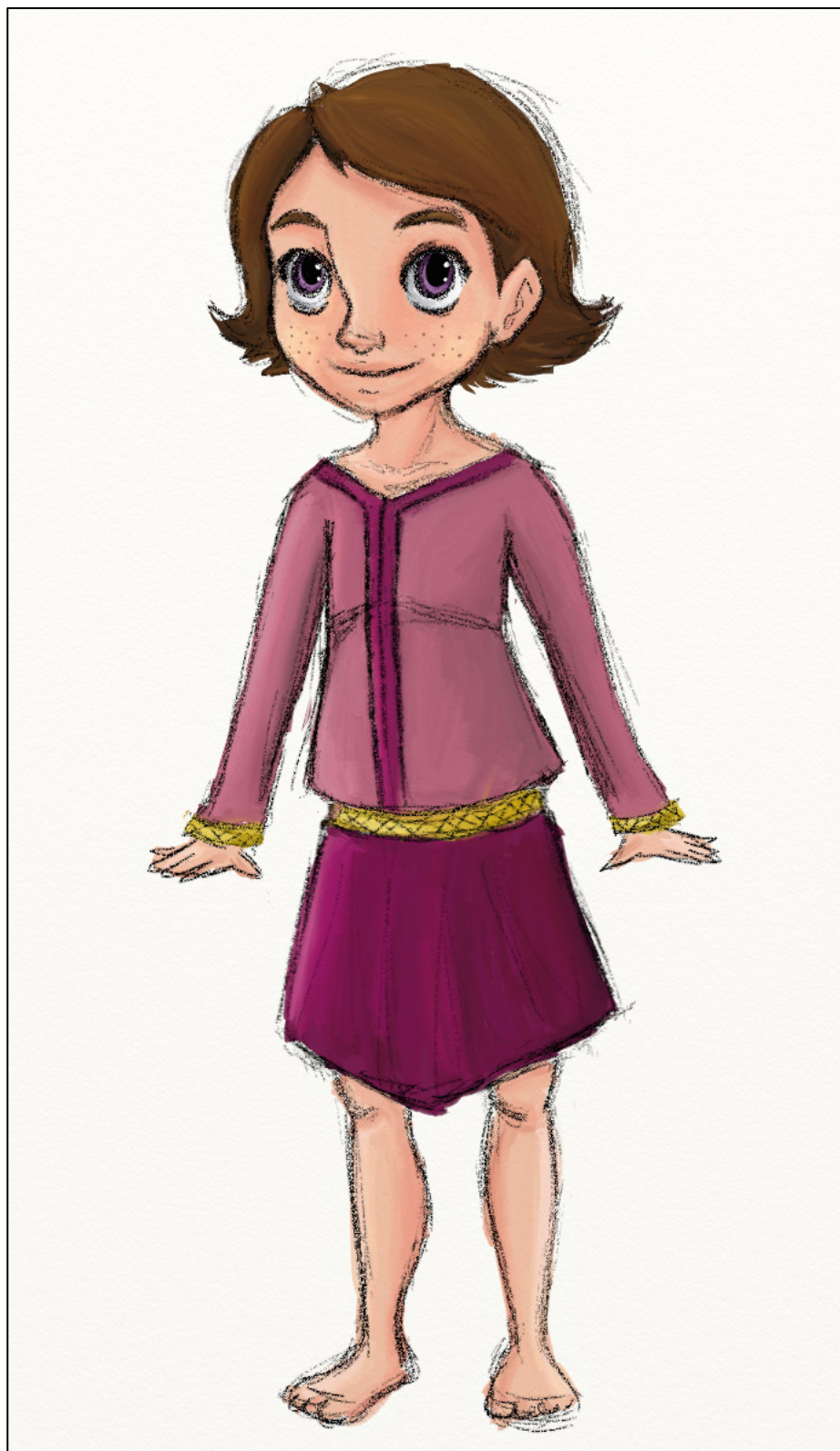
Three-Quarter View:

Fig. 4.16 Kaylee three-quarter view.

Front View:



Fig. 4.17 Kaylee front view.

Profile View:

Fig. 4.18 Kaylee profile view.

Back View:



Fig. 4.19 Kaylee back view.

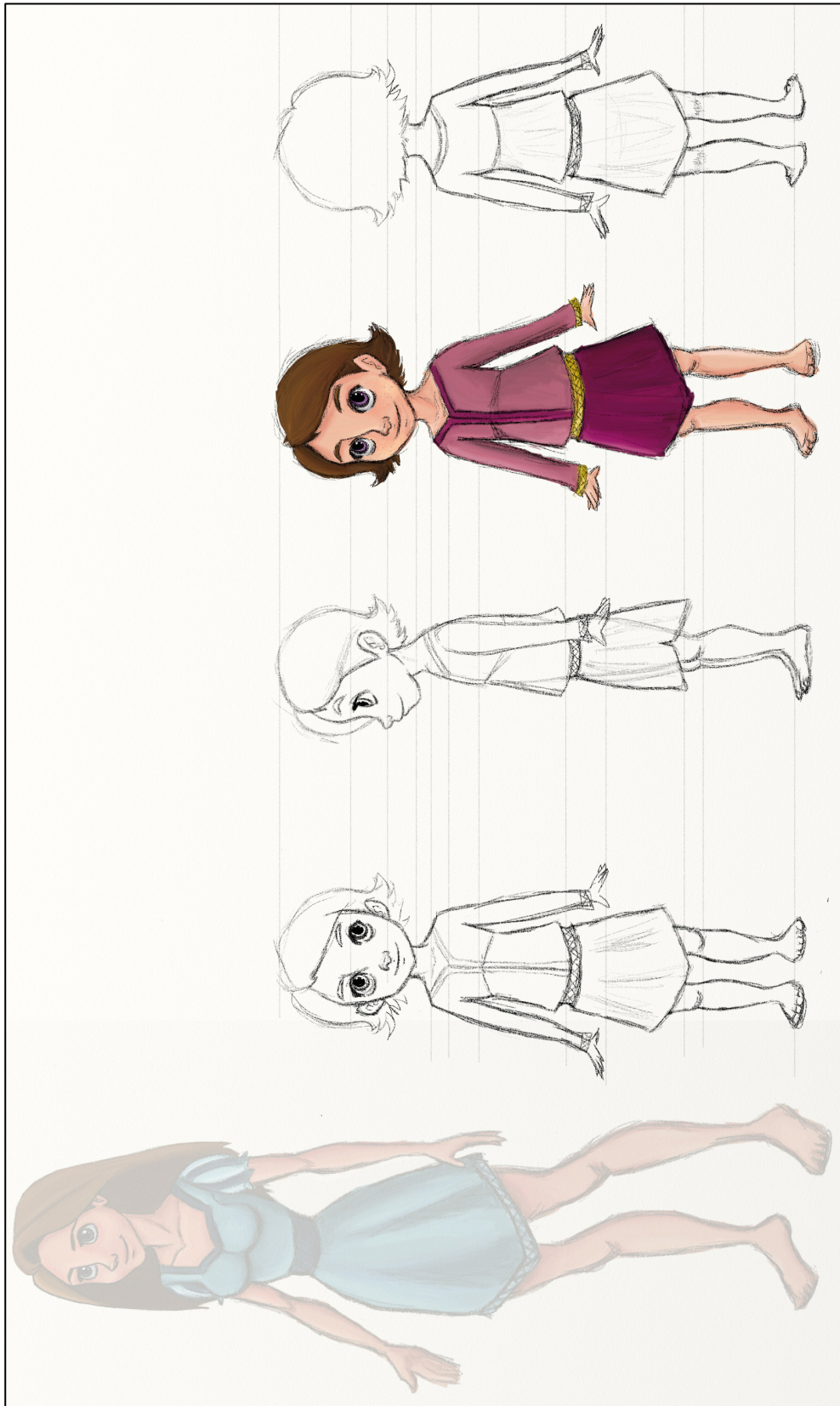
All Views and size comparison:

Fig. 4.20 Kaylee all views.

Colors:

These are the main flat colors of the Character. Shadows or bright tones are not included.

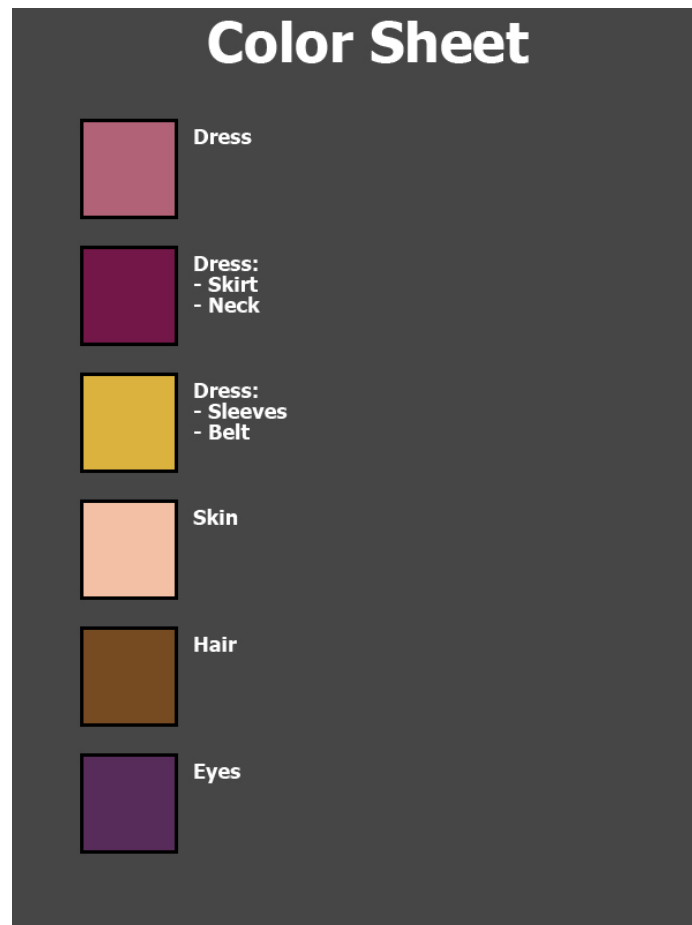


Fig. 4.21 Kaylee Color Sheet.

Clarifications:

She has freckles on her cheeks, and like Keira, both sides of the Skirt have a little “triangle”, you can see this on Figure 4.22.

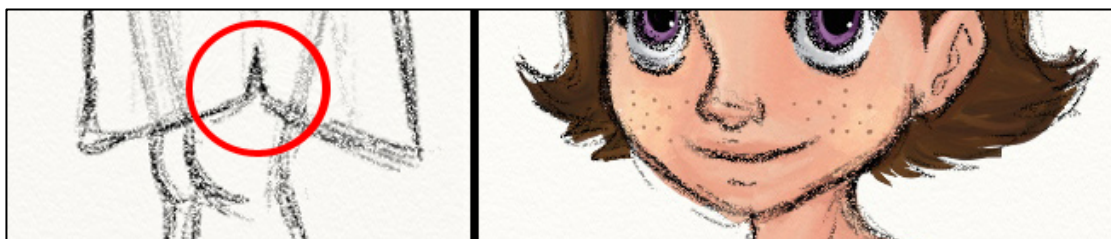


Fig. 4.22 Kaylee skirt detail and freckles.

c) Character Expressions

All Views: On Figure 4.23, Top-Right: Angry – Top-Left: Happy – Center: Neutral – Bottom-Right: Surprised – Bottom-Left: Sad.

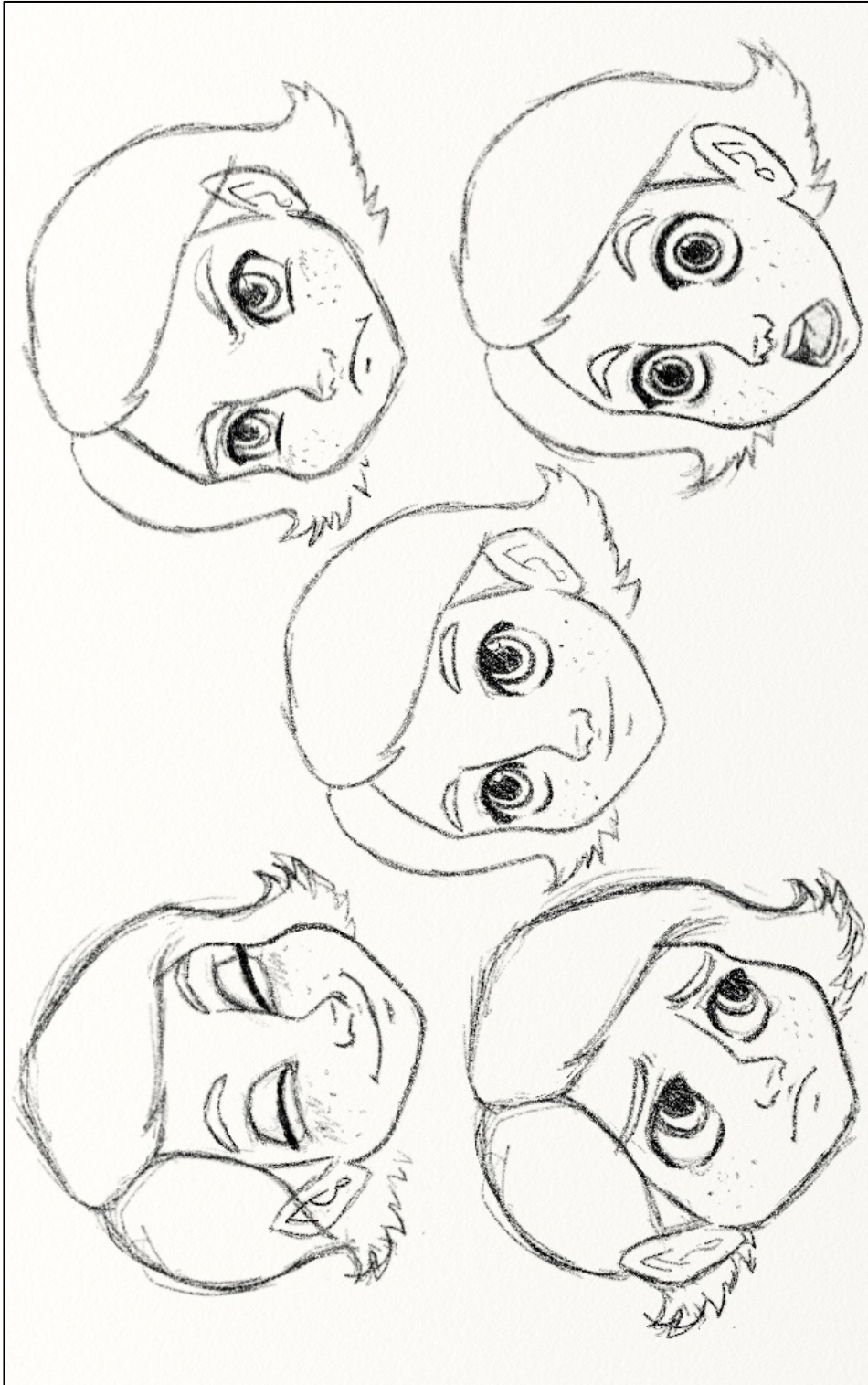


Fig. 4.23 Kaylee all expressions.

4.3.3. The King

a) Description and Data

“The King” is the King of the Kingdom. He is a good person and a neighbouring cordial King. He cares for the Kingdom people. Sometimes he leaves the royal castle for some days when he has to sign different agreements and solve other political aspects.

The King exiled his son due to an altercation. During the King’s absence his son committed many atrocities, when the King returned he exiled his son. Then his son became “The Black Knight”.

Role: Major Character

Age: 60 years

Age (Young version): 55 years

Gender: Male

Height: 1.83 m

Weight: 86 Kg

Personality:

He is kind, cordial and liable. He can take very important decisions without hesitation. He is kind-hearted but he is also very tough when it is necessary.

Relationships:

He is the father of the Black Knight. He knows almost every people of the Kingdom. When he was a child he thought he saw a man with purple eyes, a man belonging to the ancient race, but it is just a vague memory so he never saw something similar in the rest of his life, so he thinks that is a legend as the rest of the people.

b) Character Design

When designing The King I wanted to create an imposing character, but with a cordial and liable expression, a Father figure.

For achieving this I have combined a kind face, with a great imposing body. The clothes were very important to create that feeling. At the beginning, the King outfit was snug and warm. This does not match with the general climate of the world, so I managed to get a fresh outfit with an imposing feeling. I put volume on the shoulders and the neck part of the cape to give a majesty sensation. With the combination of the short sleeves and the open neck shirt I give to the character a fresh style.

At the beginning the design of the King was too young, so I included some elements to increase his age slightly, marked expression, hair over his body, greayer hair.

As well as with the other characters, I have used different triangle V-shapes in his outfit; the cape, the V-neck of the shirt. The King wears a very colourful outfit, which represents the colours of the Kingdom: Green and Yellow.

Three-Quarter View:

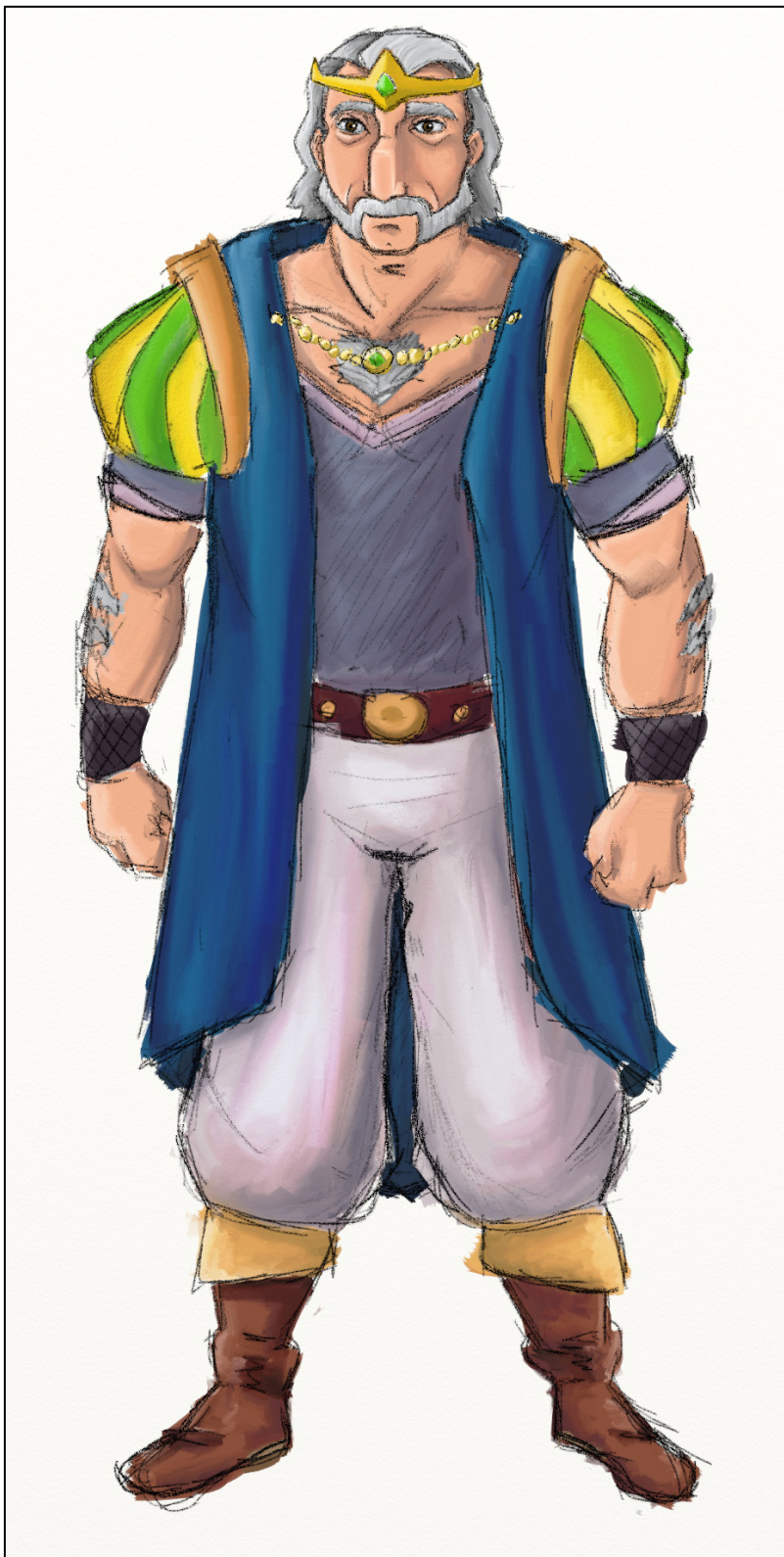


Fig. 4.24 King three-quarter view.

Front View:

Fig. 4.25 King front view.

Profile View:



Fig. 4.26 King profile view.

Back View:

Fig. 4.27 King back view.

All Views and size comparison:

Fig. 4.28 King all views.

Colors:

The King wears a very colorful outfit, with the main colors of the Kingdom Green and Yellow. These are the main flat colors of the Character. Shadows or bright tones are not included.

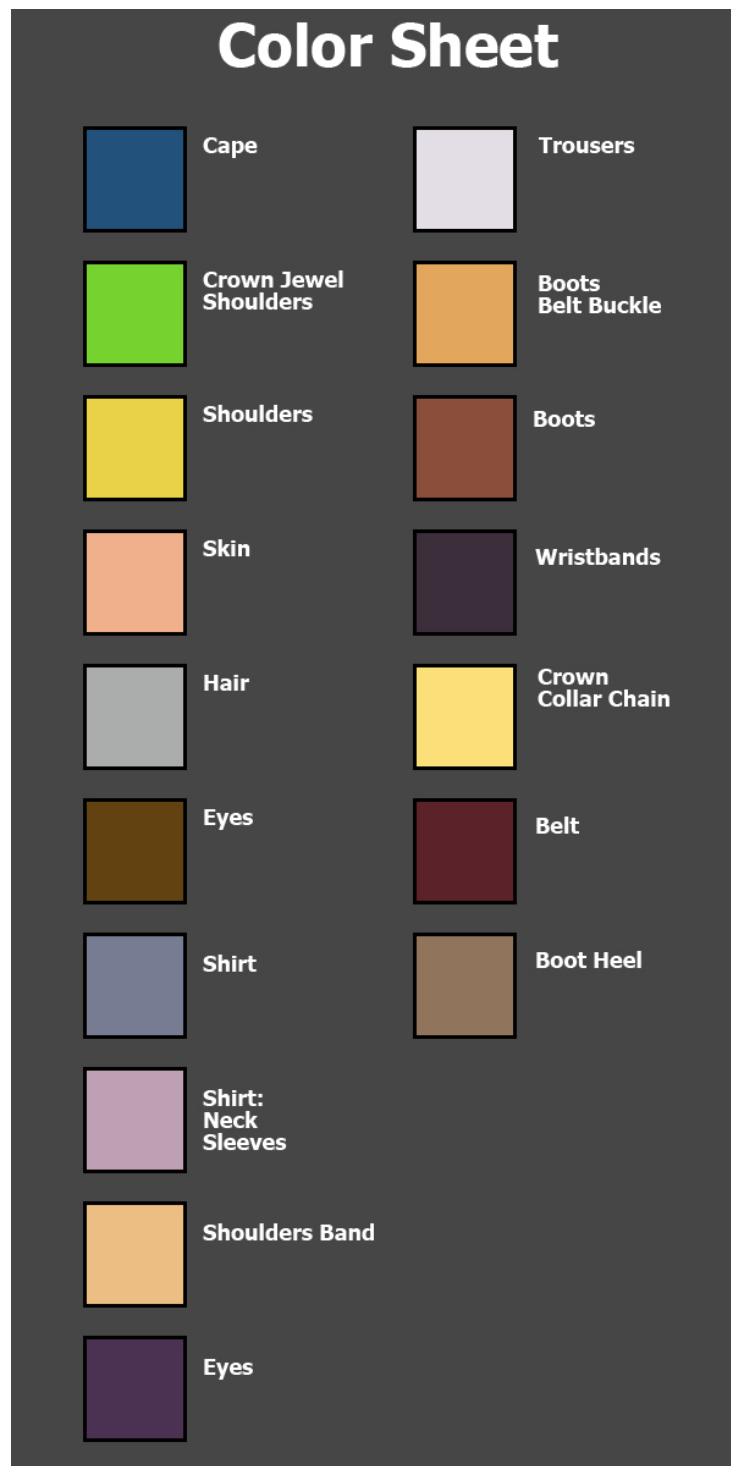


Fig. 4.29 King Color Sheet.

Clarifications:

When the King is young in the first part of the short, his hair is going to be less gray. A blonder tone, you can see this on Figure 4.30.



Fig. 4.30 Young and blonder King's Hair.

The King without the crown:

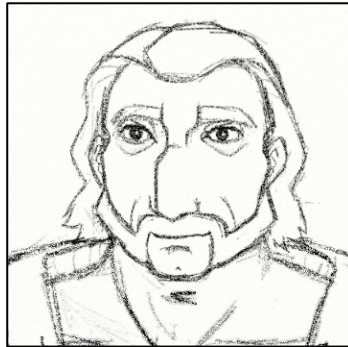


Fig. 4.31 King without crown – Three-Quarter.

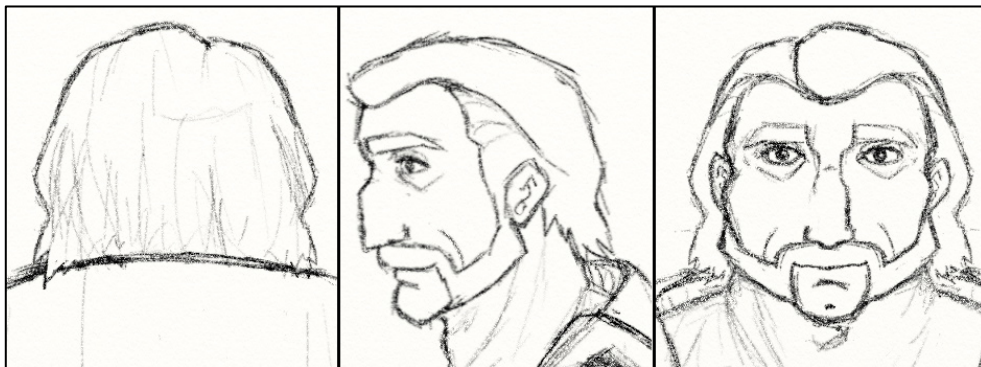


Fig. 4.32 King without crown – Other views.

King's body shape through the cape:

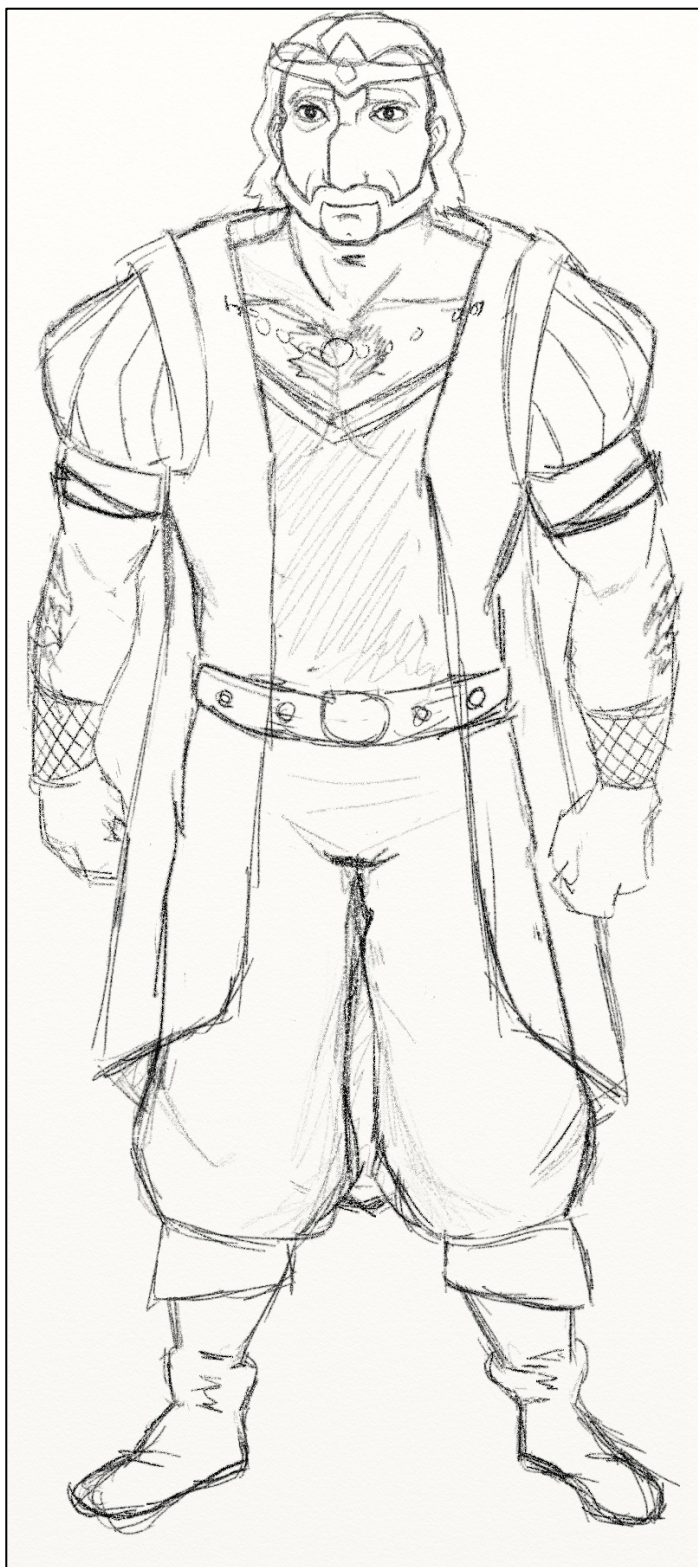


Fig. 4.33 King's body shape – Three-Quarter.

c) Character Expressions

All Views: On Figure 4.34, Top-Right: Angry – Top-Left: Happy – Center: Neutral – Bottom-Right: Surprised – Bottom-Left: Sad.

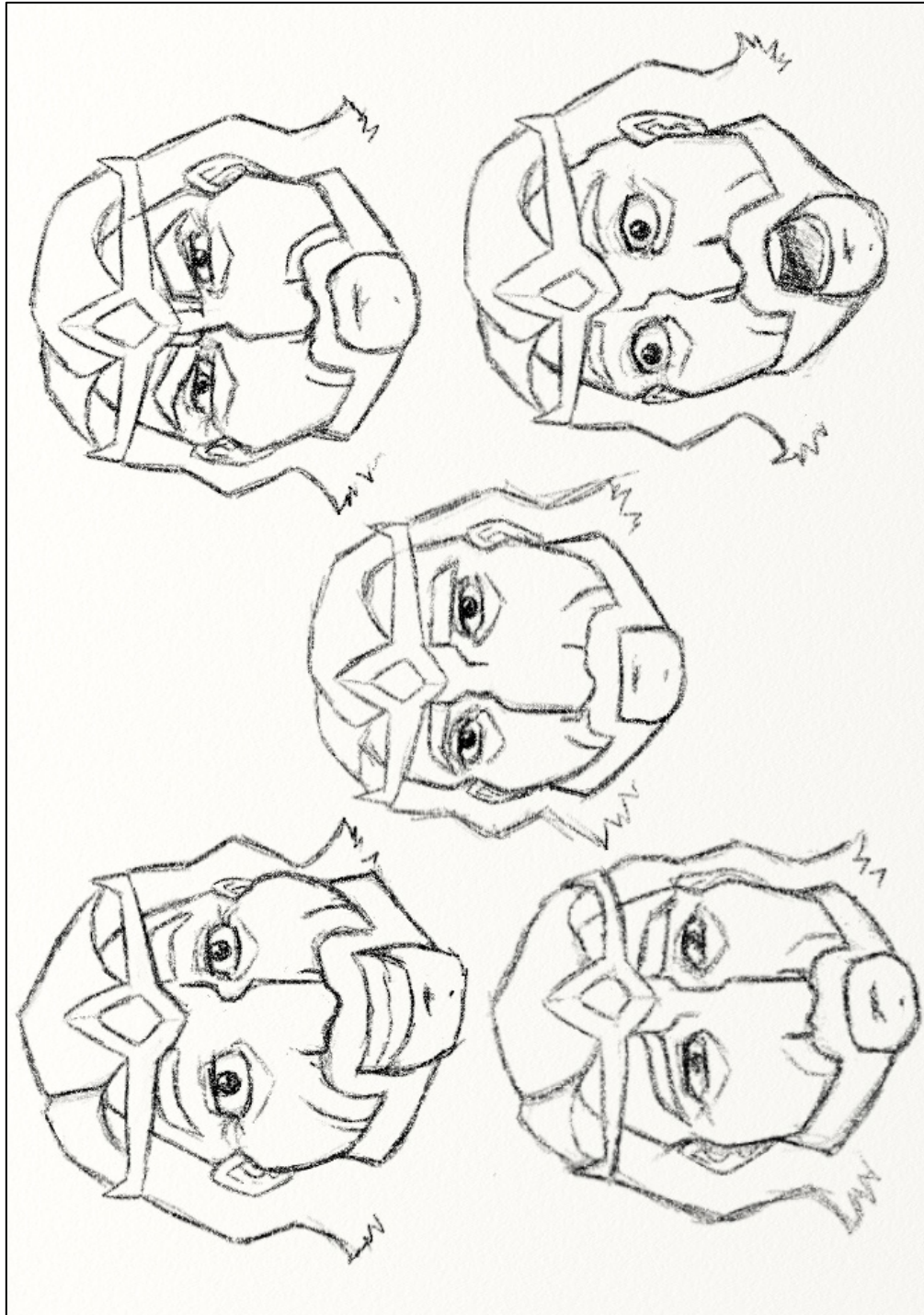


Fig. 4.34 King all expressions.

4.3.4. Ewan – Young Black Knight

a) Description and Data

His name is Ewan. He is the Prince and the heir to the throne, but he is too naughty and disobedient. Even since young he was evil, but sometimes he used to demonstrate a bit of kindness thanks to the advice of his father.

But he will fall due to his innate evilness, and he will lose all his humanity when becoming the Black Knight. He wears the crown of the Prince, which is similar to King's crown.

Role: Antagonist

Age: 25 years

Gender: Male

Height: 1.78 m

Weight: 72 Kg

Personality:

He is distant and cruel. Is very difficult for him to demonstrate kindness and humanity, his father teaches him how to be a good man, but it goes against his nature.

Relationships:

He is the son of the King. He does not care about people. He does not know any people descendant of the ancient race. He used to believe in the legend when he was a child, and the book of the legend was one of his favourites. But now he thinks that is nonsense, as a lot of people he thinks that is a mere legend.

b) Character Design

When designing the Young Black Knight, Ewan, I wanted to create a young man which looks like he have some kind of evilness inside him, combined with the normal aspect of a guy who is still young. I wanted to include in the design the sensation of a young man with a blurry future, which is still undefined but is likely to end badly.

I wanted to put some details to link him with his father, but not many details. This is due to his personality is totally different from his father's personality, so they only have in common a few details.

As his father, he is also blond. And he wears a golden crown with a green jewel, similar to the crown of his father but smaller.

The main colour of his outfit is red, which is totally different from the other characters of the story, which wear more relaxed and cold colours. Red can represent aggressiveness and domination, angriness and resentment, intolerance and rebelliousness. These are characteristics that match with the character.

He is lower and thinner than the Black Knight, but his body structure is the same.

Three-Quarter View:

Fig. 4.35 Ewan three-quarter view.

Front View:

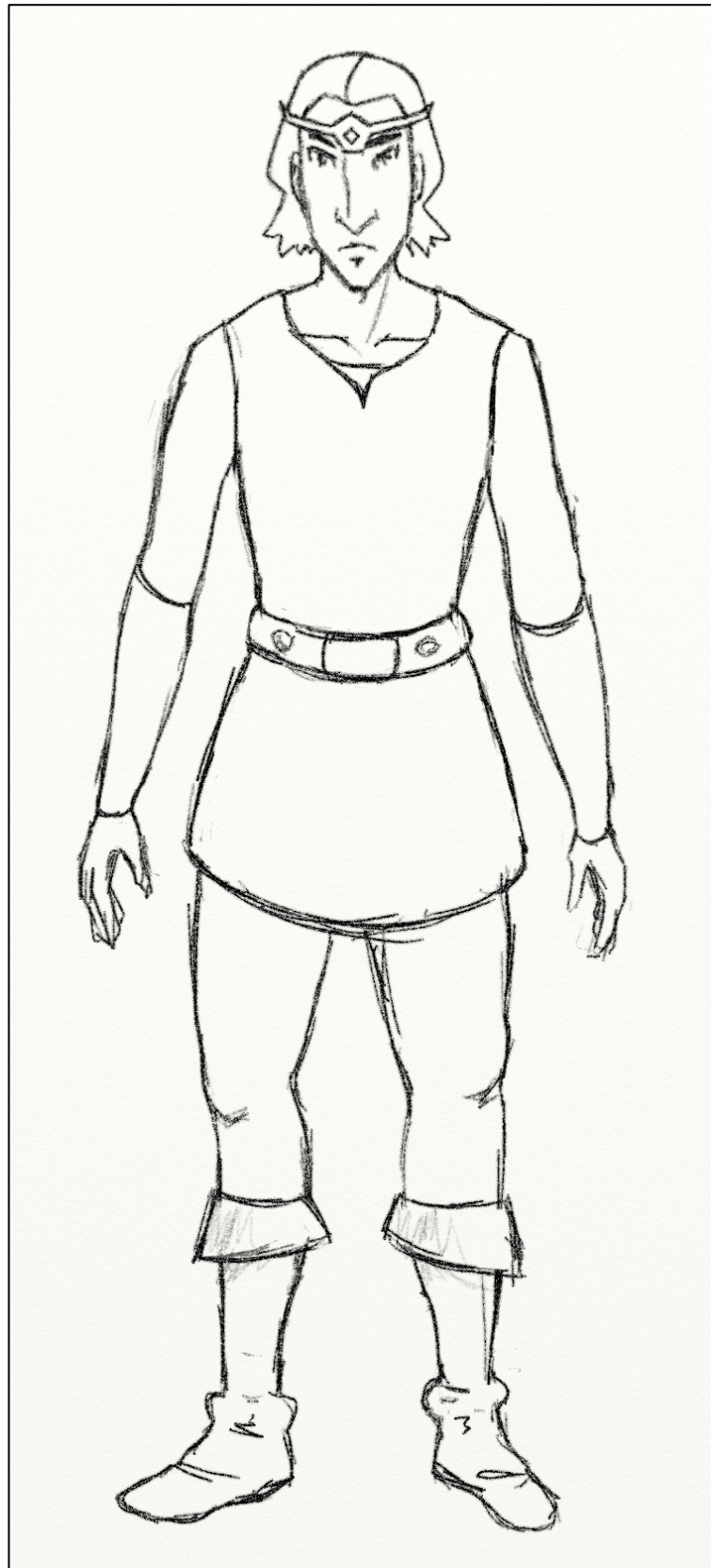


Fig. 4.36 Ewan front view.

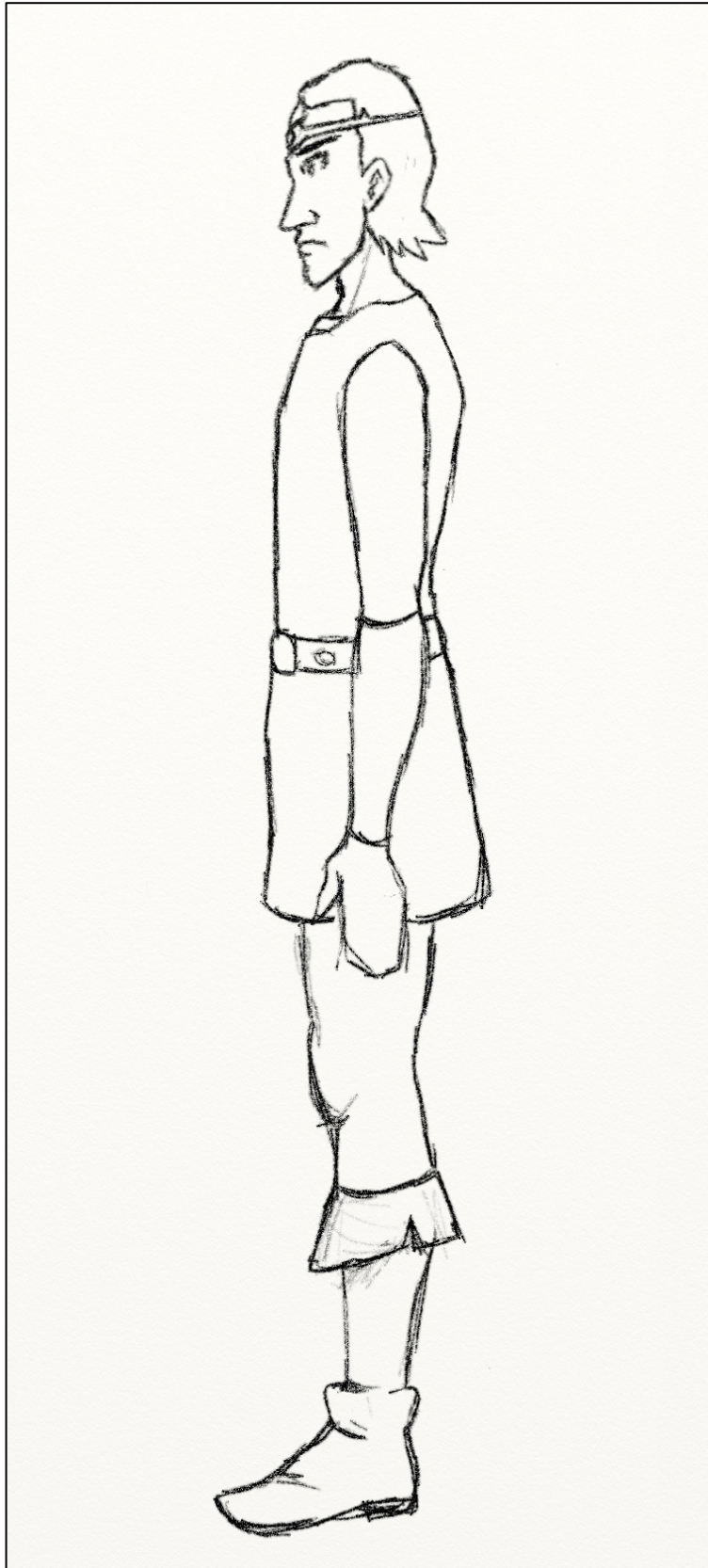
Profile View:

Fig. 4.37 Ewan profile view.

Back View:

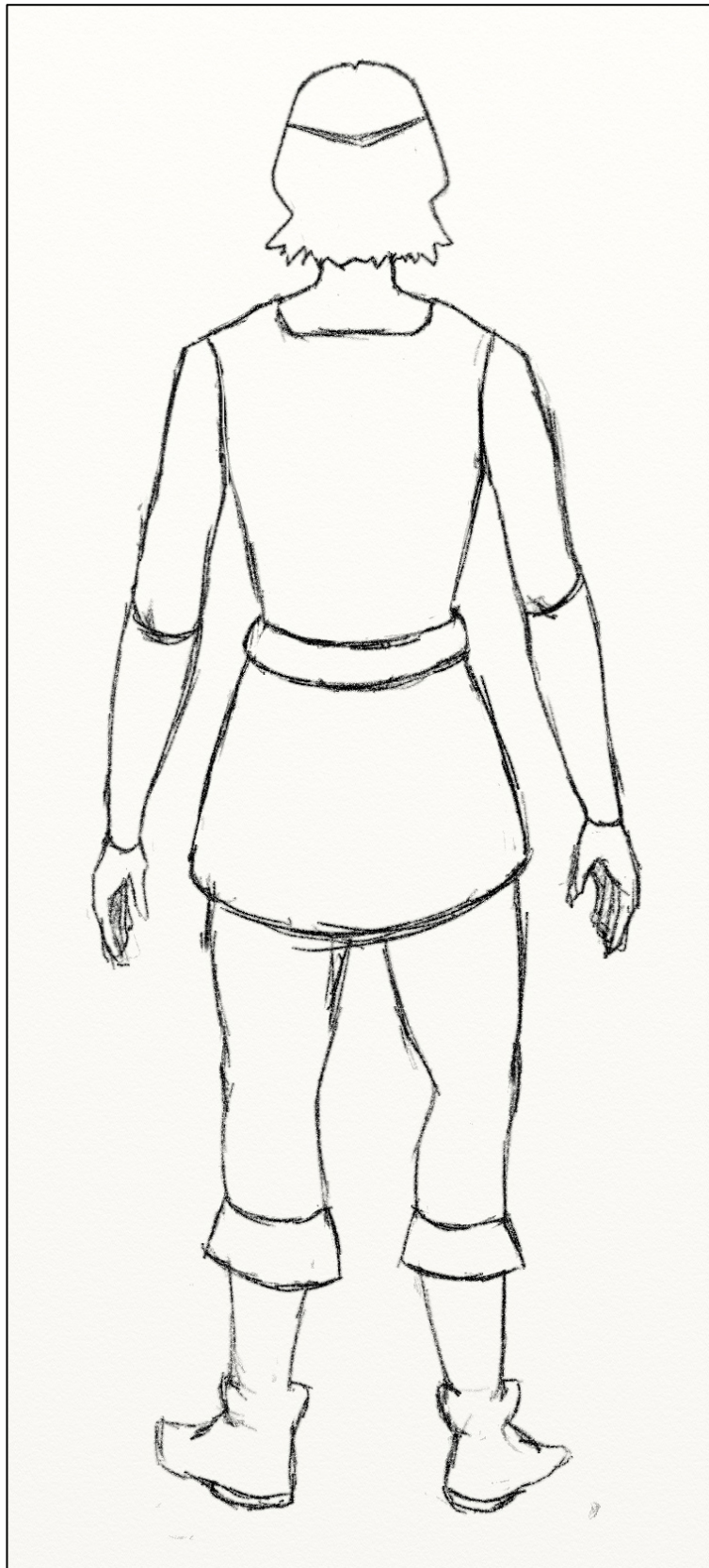


Fig. 4.38 Ewan back view.

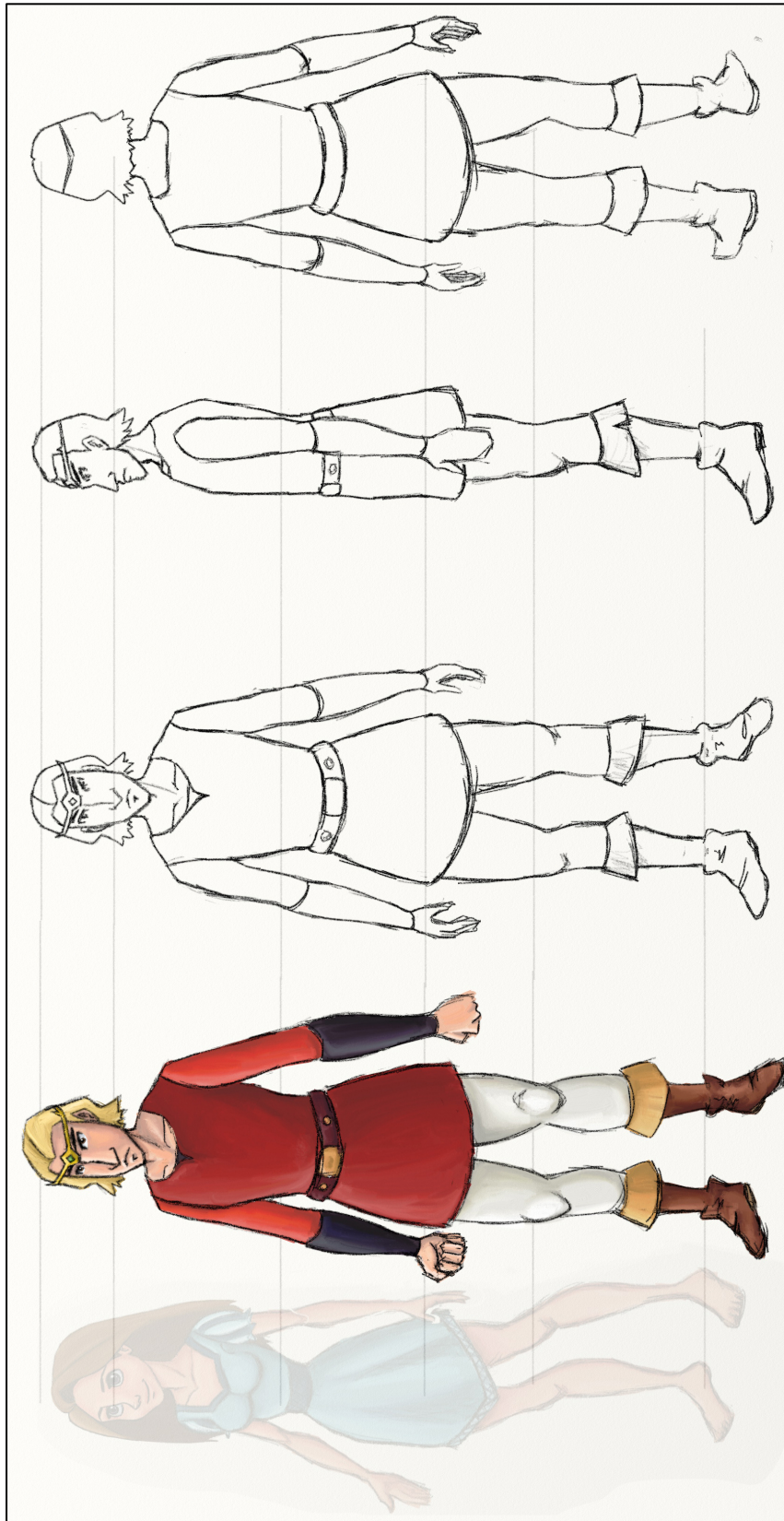
All Views and size comparison:

Fig. 4.39 Ewan all views.

Colors:

These are the main flat colors of the Character; shadows or bright tones are not included. He wears a crown similar to that of his father, with the main colors of the Kingdom Green and Yellow/golden.



Fig. 4.40 Ewan Color Sheet.

Clarifications:

Prince Ewan without the crown:



Fig. 4.41 Ewan without crown – Three-Quarter.



Fig. 4.42 Ewan without crown – Other views.

c) Character Expressions

All Views: On Figure 4.43, Top-Right: Angry – Top-Left: Happy – Center: Neutral – Bottom-Right: Surprised – Bottom-Left: Sad.

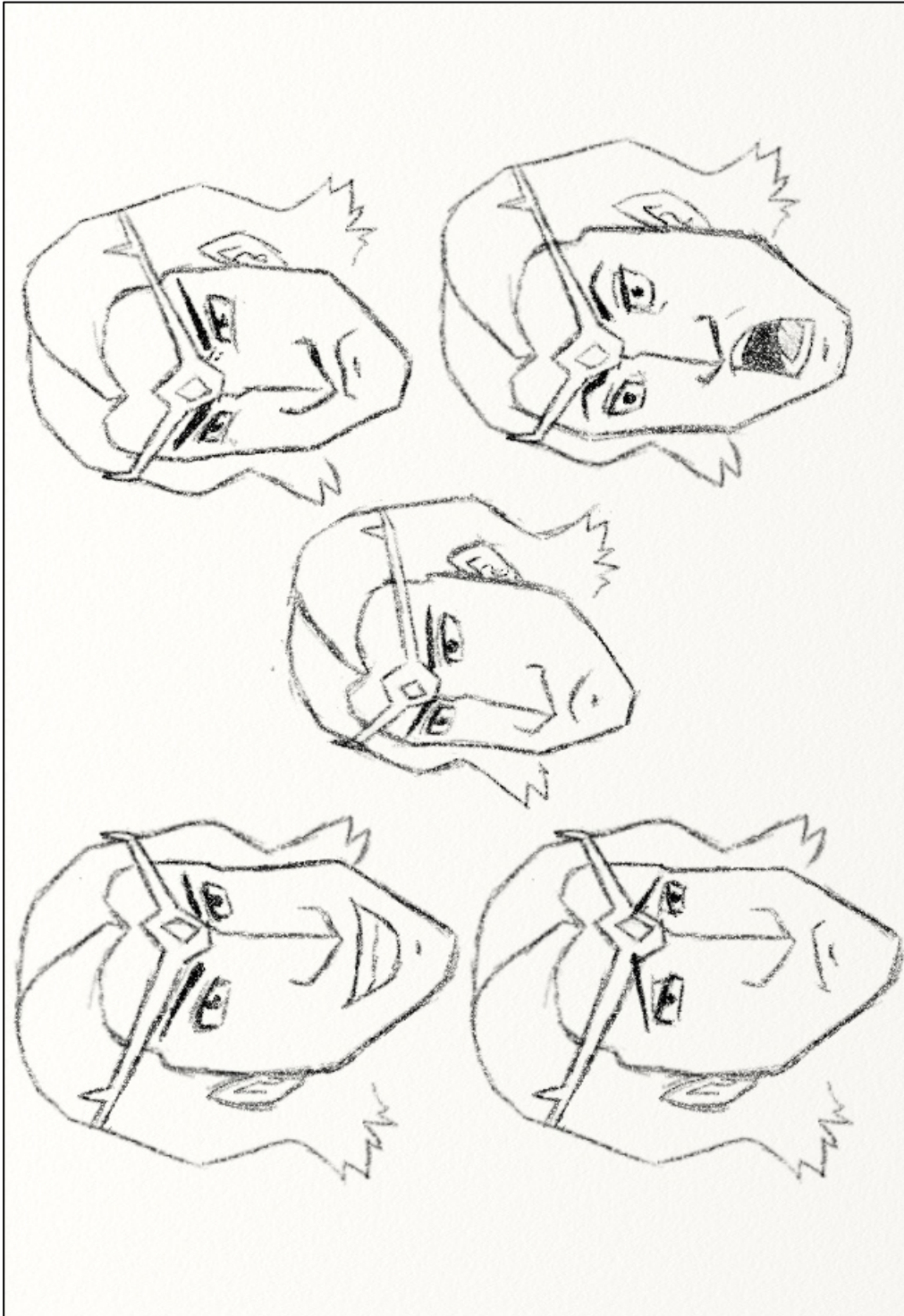


Fig. 4.43 Ewan all expressions.

4.3.5. The Black Knight

a) Description and Data

The Black Knight is an evil and dark man. Exiled by his father, he became a very bad person and a hermit. He lives alone in the mountains and goes down to loot and steal things from the citizens, the people of the villages and the farmers. Now he is pure evilness and causes fear among citizens.

He wears full body black armour, making difficult to differentiate their forms, and looking as a black mass; the only point that is illuminated is the eyes zone, which emits a red and diabolical light.

Role: Antagonist

Age: 30 years

Gender: Male

Height: 1.90 m

Weight: 85 Kg

Personality:

He has no compassion, in the past he used to be more human, but now is more like a Monster, and he is blinded by revenge. His bad feelings and manners have been increased, is haughty and flagitious.

Relationships:

He is the son of the King who exiled him. He does not know any people descendant of the ancient race, in fact as a lot of people he thinks that is a mere legend.

b) Character Design

When designing the Black Knight I tried to create a haughty character, an evil and dark character but also lordly and tight. To achieve this I have created a stretched character, not so heavy and quite tall.

I have designed him with a full armour, it covers his body completely covering also any sign of humanity of his old being. I designed a helmet that does not fit the common shape of Human head for increase the dehumanization of the Character.

Firstly the colours for the different parts of the armour were different, but he seemed less evil. I changed the colours to different black tones, and now he is more thundering and spooky. Also, with these black and monotone colours, creates a strong contrast between him and the rest of the characters who are very colourful and alive.

His body structure is the same as his normal young human structure, but enlarged and a bit stretched.

Three-Quarter View:

Fig. 4.44 Black Knight three-quarter view.

Front View:



Fig. 4.45 Black Knight front view.

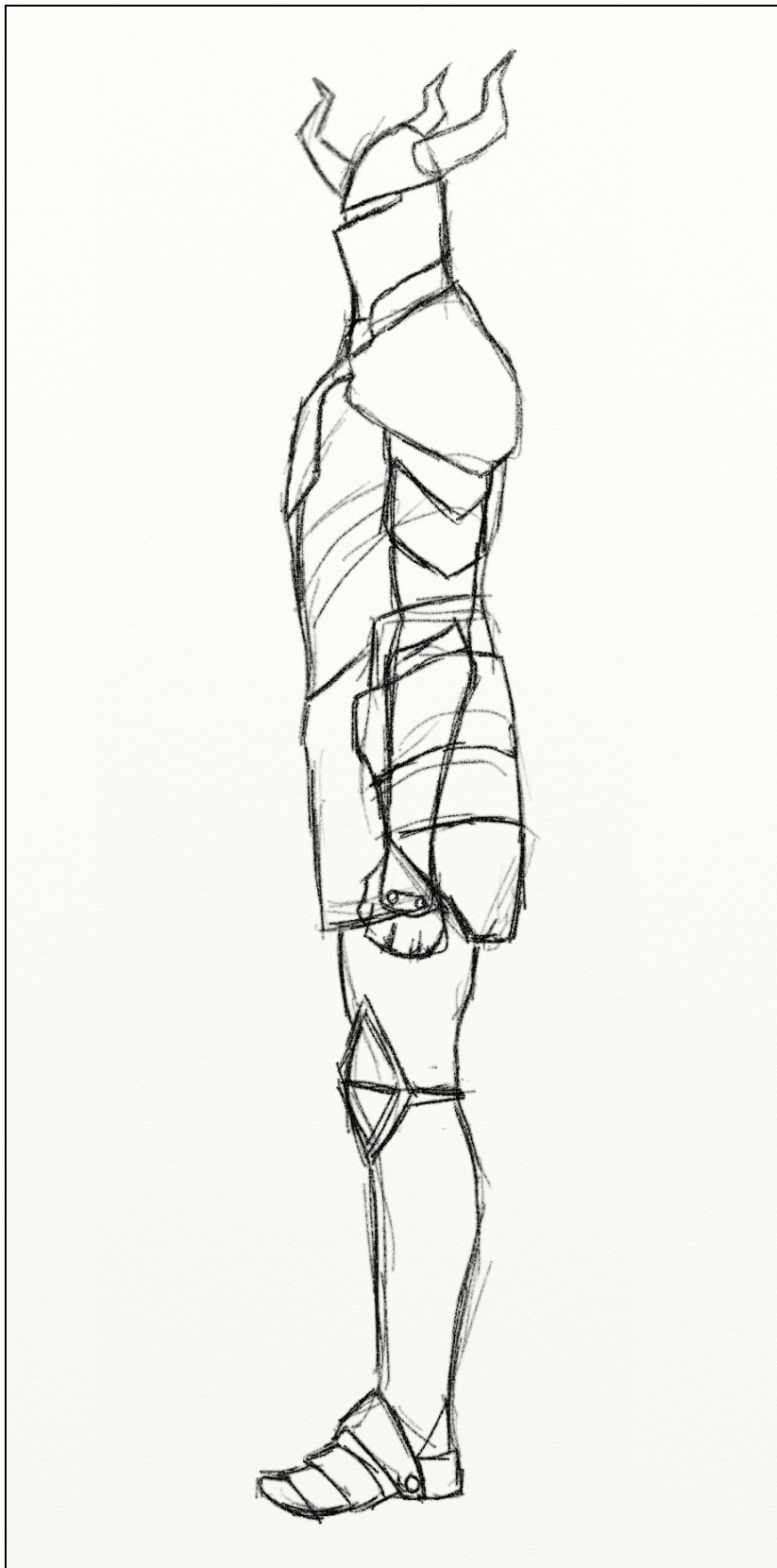
Profile View:

Fig. 4.46 Black Knight profile view.

Back View:

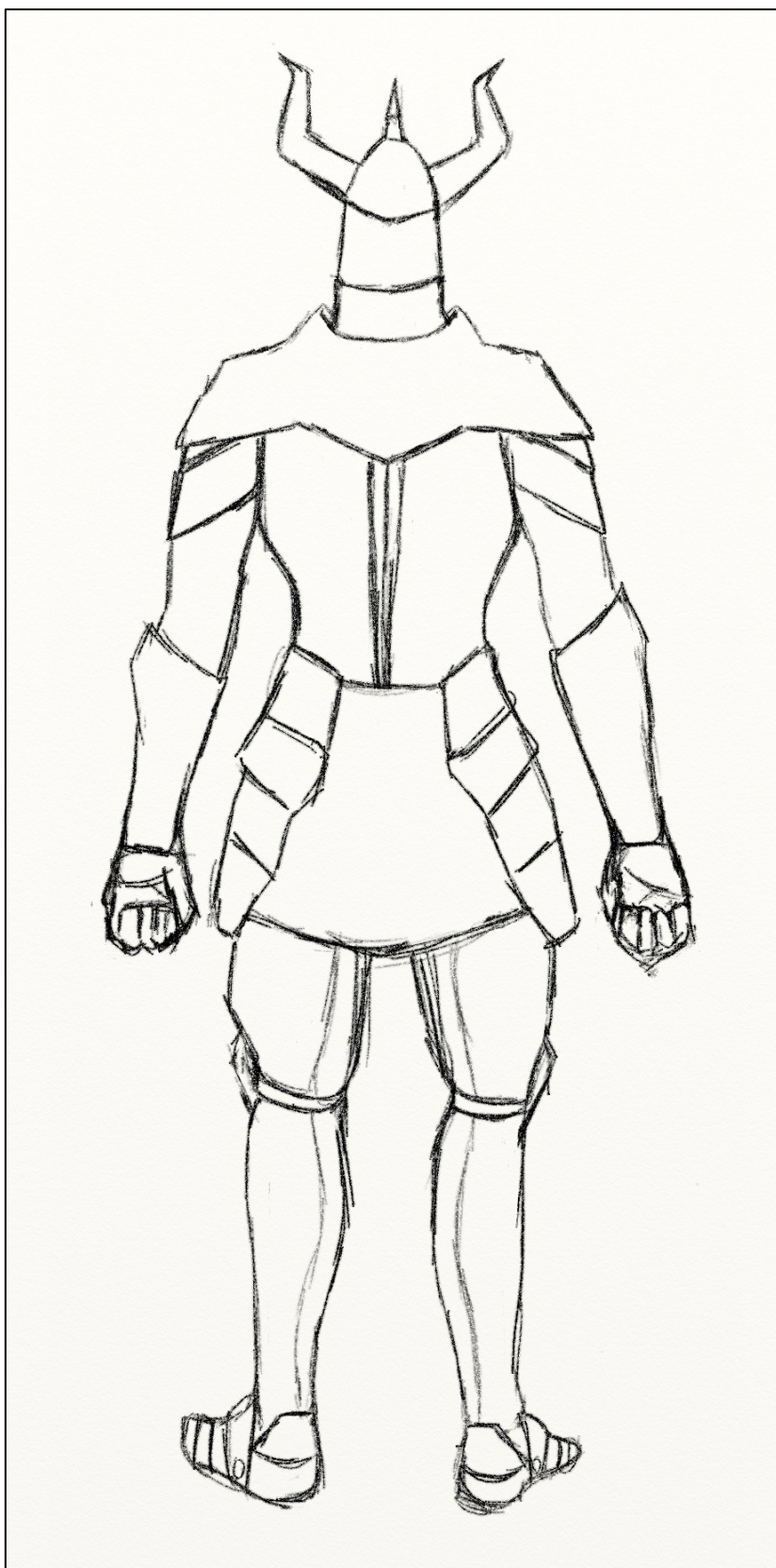


Fig. 4.47 Black Knight back view.

All Views and size comparison:

Fig. 4.48 Black Knight all views.

Colors:

These are the main flat colors of the Black Knight. I included a flat colored version of the Character, because with shadows and lights the result changes a lot. As a full black character, the volumes and shapes are determined by the lighting. The colors of the Black Knight are based on different grey scale with little blue hue.

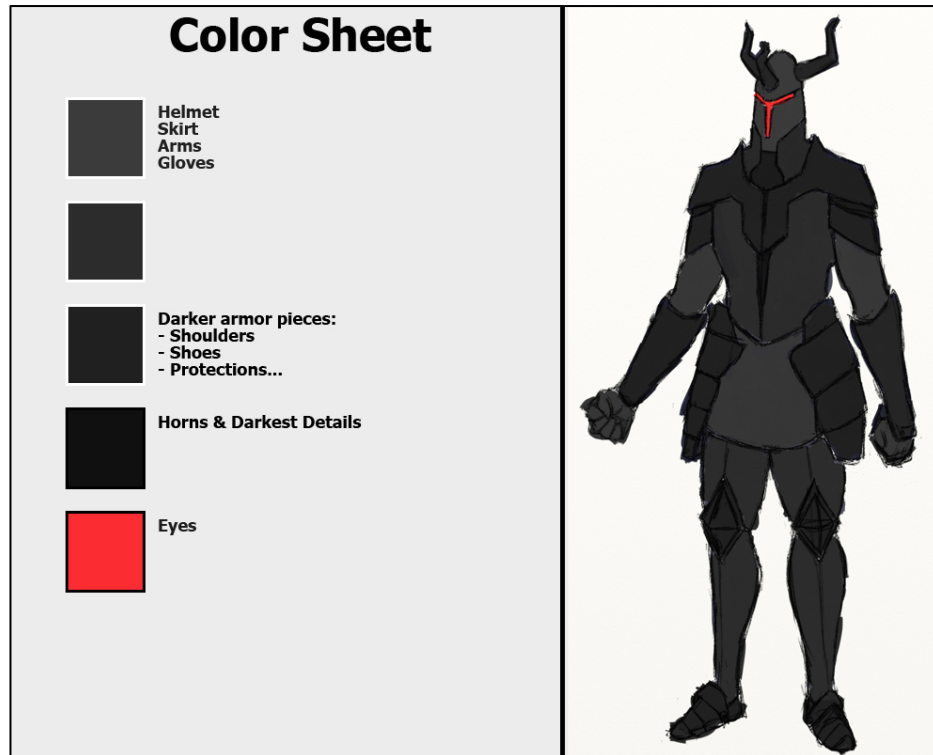


Fig. 4.49 Black Knight Color Sheet.

Clarifications:

Black Knight "eyes" illuminate and glow when he is anger or excited, and also the glow increases in darker scenes, you can see this on Figure 4.50.

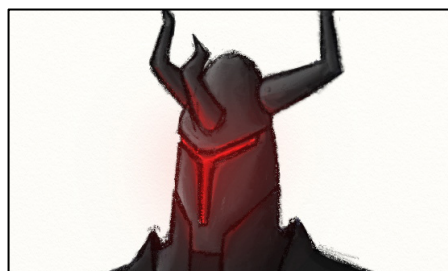


Fig. 4.50 Black Knight glowing eyes.

c) Character Expressions

He is wearing a Helmet, so he has no face expressions. The major part of his expressiveness is represented through corporal expression. Also, depending on his mood the red glow of the eyes will change. I have exaggerated the eyes on these designs, but in the real short the helmet will be solid with no bending.

All Views: On Figure 4.51, Top-Right: Angry – Top-Left: Happy – Center: Neutral – Bottom-Right: Surprised – Bottom-Left: Sad.

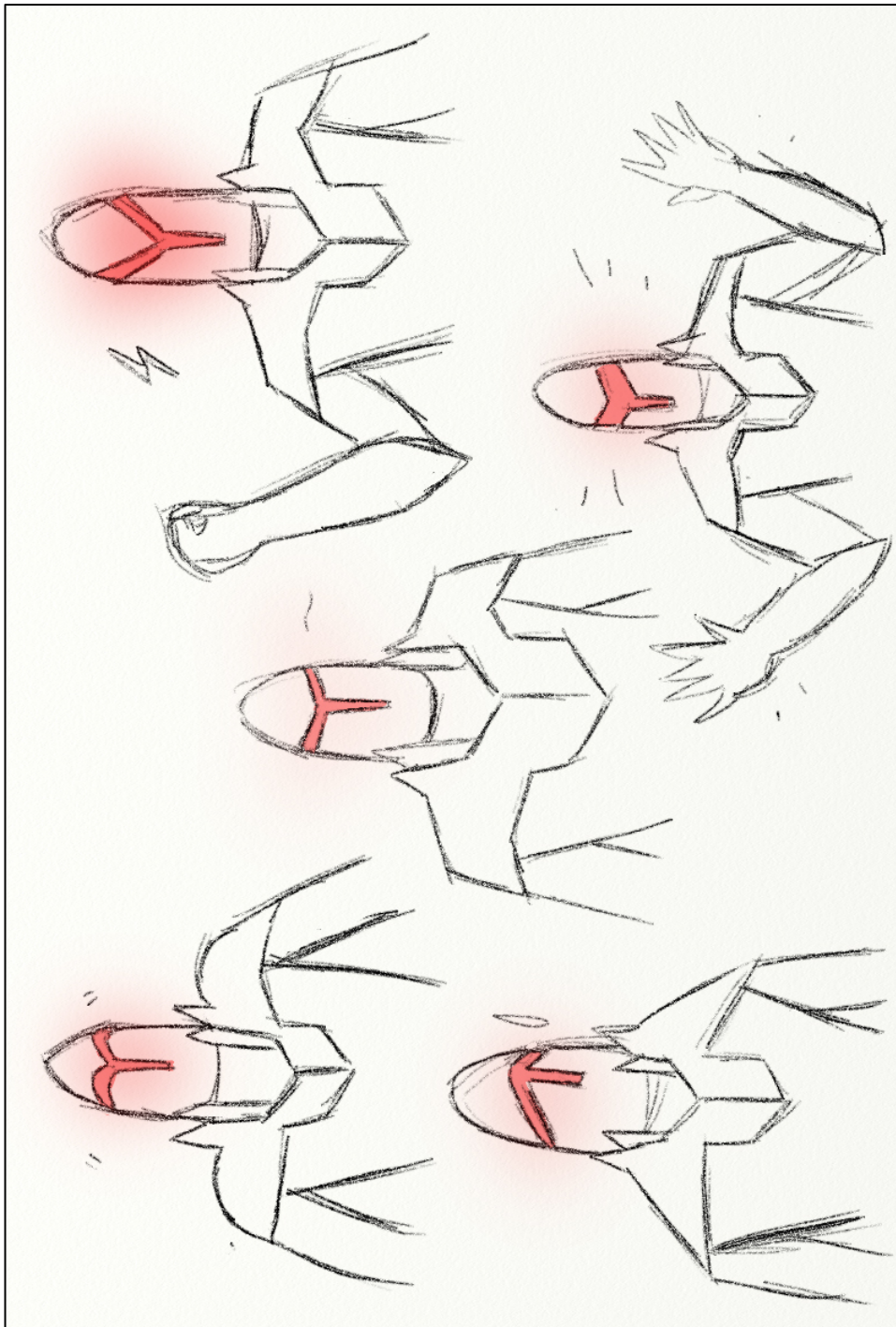


Fig. 4.51 Black Knight all expressions.

4.3.6. Castle Guards

a) Description and Data

There are plenty of guards in the castle, normally two major guards are with the King, and the others are watching the most important locations of the castle. For example, there is a guard on the entrance watching for the people who want to enter the castle. It is forbidden to enter the castle at night without royal authorization. They are equipped with golden armour, based on the colours of the Kingdom, yellow and green.

Role: Minor Character

Age: 20~40 years, Major Guards are older.

Gender: Male

Height: 1.60~1.90 m

Weight: 70~85 Kg

Personality:

As separate individuals, each Guard has its own personality, but they have some characteristics in common, they are obedient and loyal, and they act as a fraternity.

Relationships:

They know all the people of the castle and the near villages. They are citizens of the kingdom. Youngest Guards did not know what happened with the King and his son (the Black Knight), but oldest Guards knew the young Black Knight and they know everything that happened.

b) Character Design

Firstly the design of the Guards I thought were more classic and standard, but I thought of giving them a more colorful aspect, because all in this world is more colorful than a normal middle age atmosphere, so I decided to make their armour from golden instead from grey and dark iron.

As minor characters, I decided to keep their eyes covered by their helmets, without showing the eyes, they keep in the background without overlapping the main characters.

I wanted to make them look distant and serious, but with the possibility of make them look friendly and warm.

Views:



Fig. 4.52 Castle Guard views.

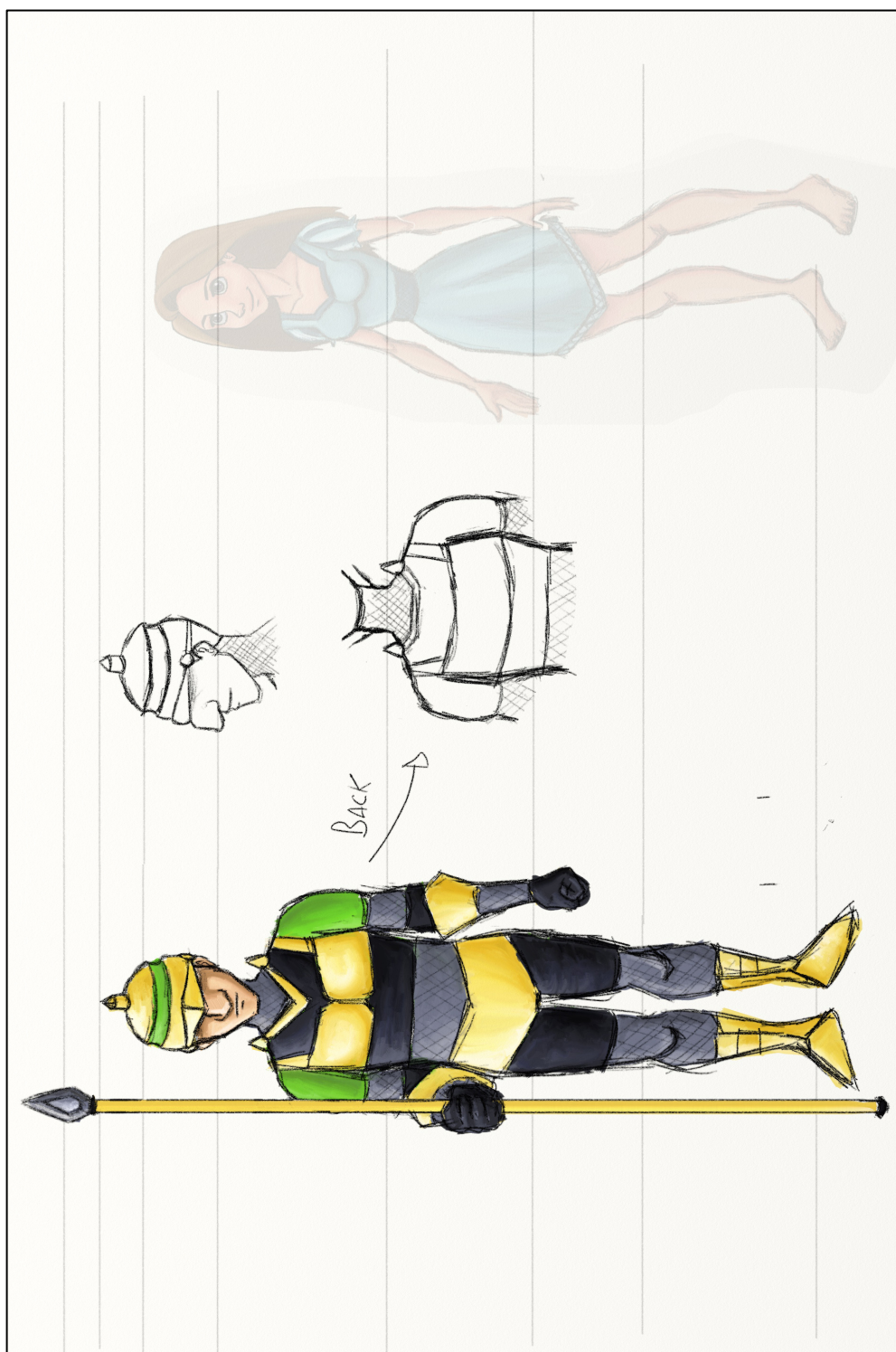
All Views and size comparison:

Fig. 4.53 Castle Guard all views.

Colors:

These are the main flat colors of the Character; shadows or bright tones are not included. The colors of the Guards are based on the Kingdom main colors, yellow and green.

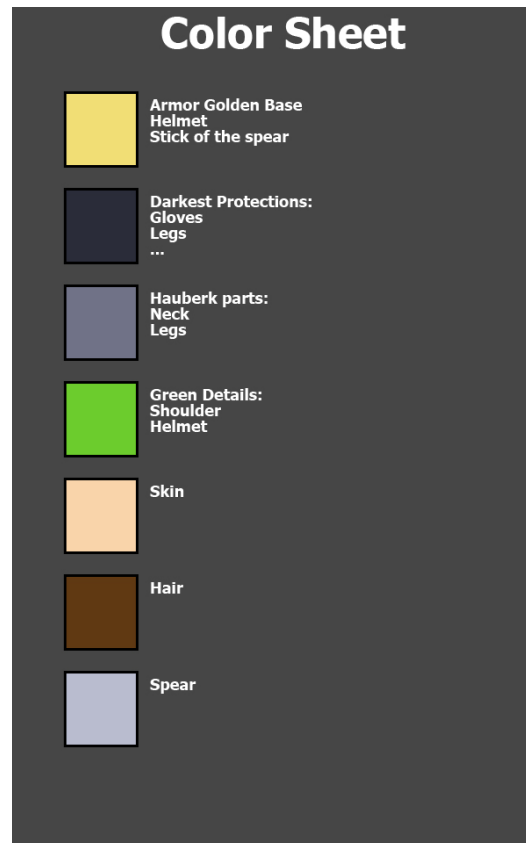


Fig. 4.54 Castle Guard Color Sheet.

Clarifications:

The major Guards are slightly older, so they have moustache, you can see this on Figure 4.55.

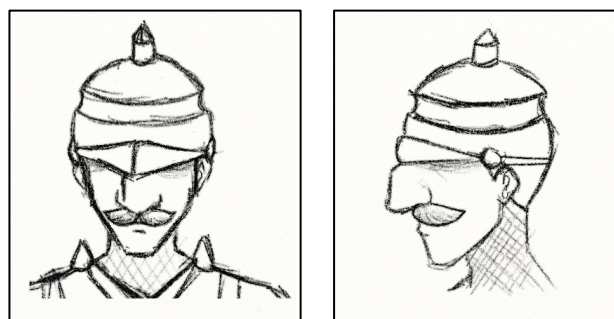


Fig. 4.55 Older Alternative Guard views.

c) Character Expressions

All Views: On Figure 4.56, Top-Right: Angry – Top-Left: Happy – Center: Neutral – Bottom-Right: Surprised – Bottom-Left: Sad.

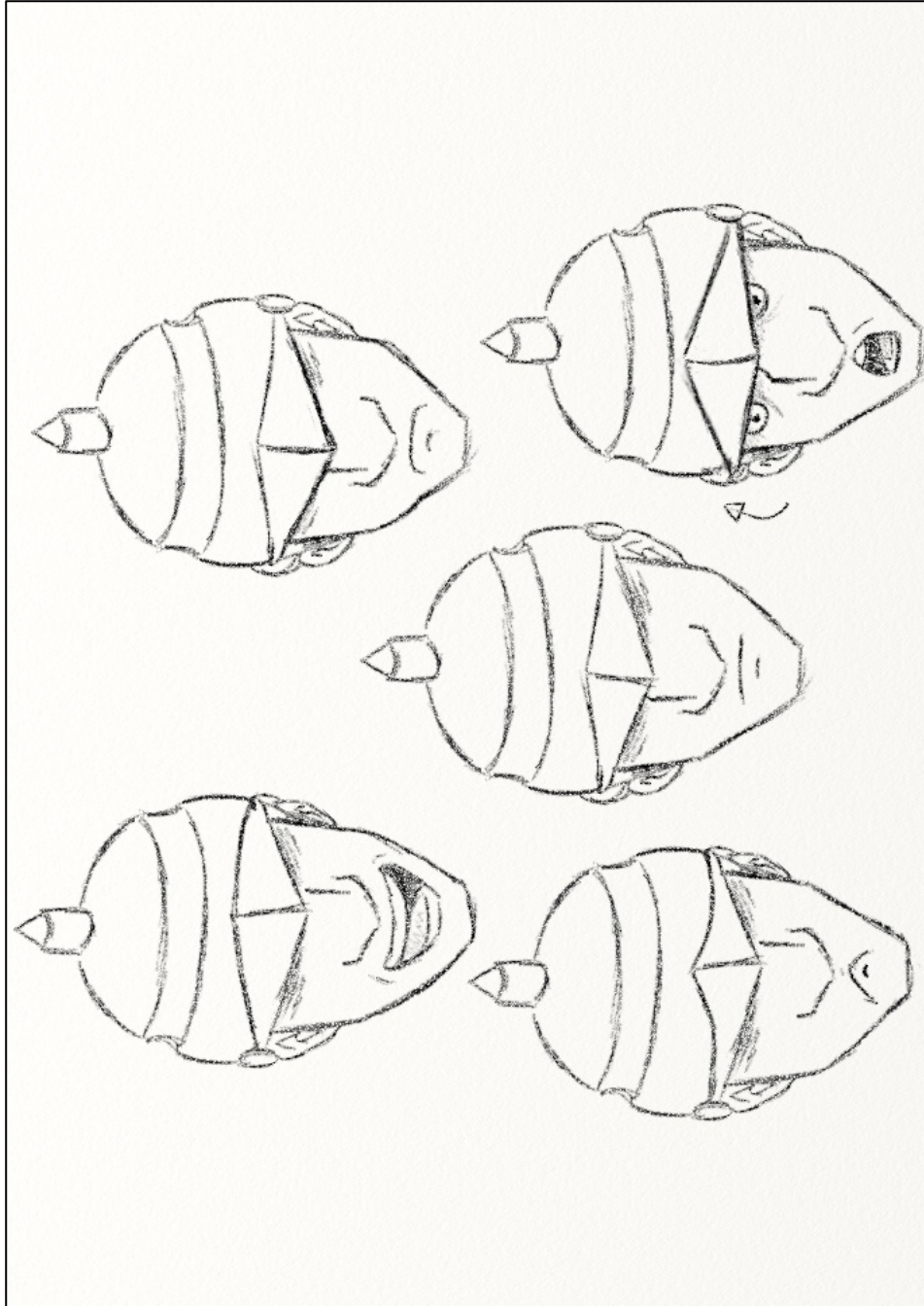


Fig. 4.56 Guard all expressions.

4.3.7. Farmer

a) Description and Data

He is a humble Farmer who lives outside the castle; he is the main supplier of the castle. He brings different foods to the castle every night to feed all the people. He drives a great cart with barrels full of different foodstuff.

Role: Minor Character

Age: 45 years

Gender: Male

Height: 1.65 m

Weight: 67 Kg

Personality:

He is quiet and calm; his life is peaceful and monotonous. He is happy working in his farm and supplying goods to the castle.

Relationships:

He knows the King and the people of the castle and the near villages.

b) Character Design

When designing the Farmer I wanted to make a quiet man, pleasant and unalterable. I exaggerated these elements with a quiet big face and expression.

Like the Guards he is a minor character, so I decided to keep their eyes like they were closed, without showing the eyes directly he keeps in the background without overlapping the main characters.

Views:



Fig. 4.57 Farmer views.

All Views and size comparison:

Fig. 4.58 Farmer all views.

Colors:

These are the main flat colors of the Character; shadows or bright tones are not included.

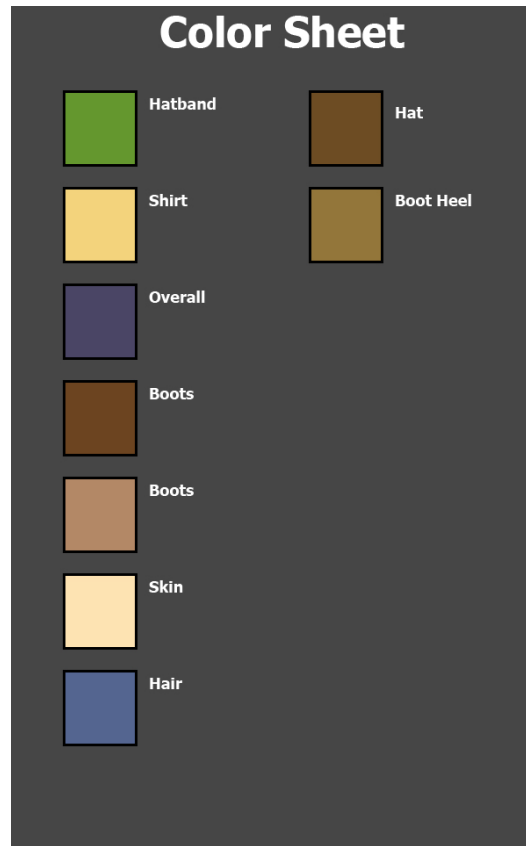


Fig. 4.59 Farmer Color Sheet.

Clarifications:

His eyes are not closed; in fact, his eyes are always like this. His eyes look like they are nearly closed but he can see perfectly, you can see this on Figure 4.60.



Fig. 4.60 Farmer Eyes.

c) Character Expressions

All Views: On Figure 4.61, Top-Right: Angry – Top-Left: Happy – Center: Neutral – Bottom-Right: Surprised – Bottom-Left: Sad.

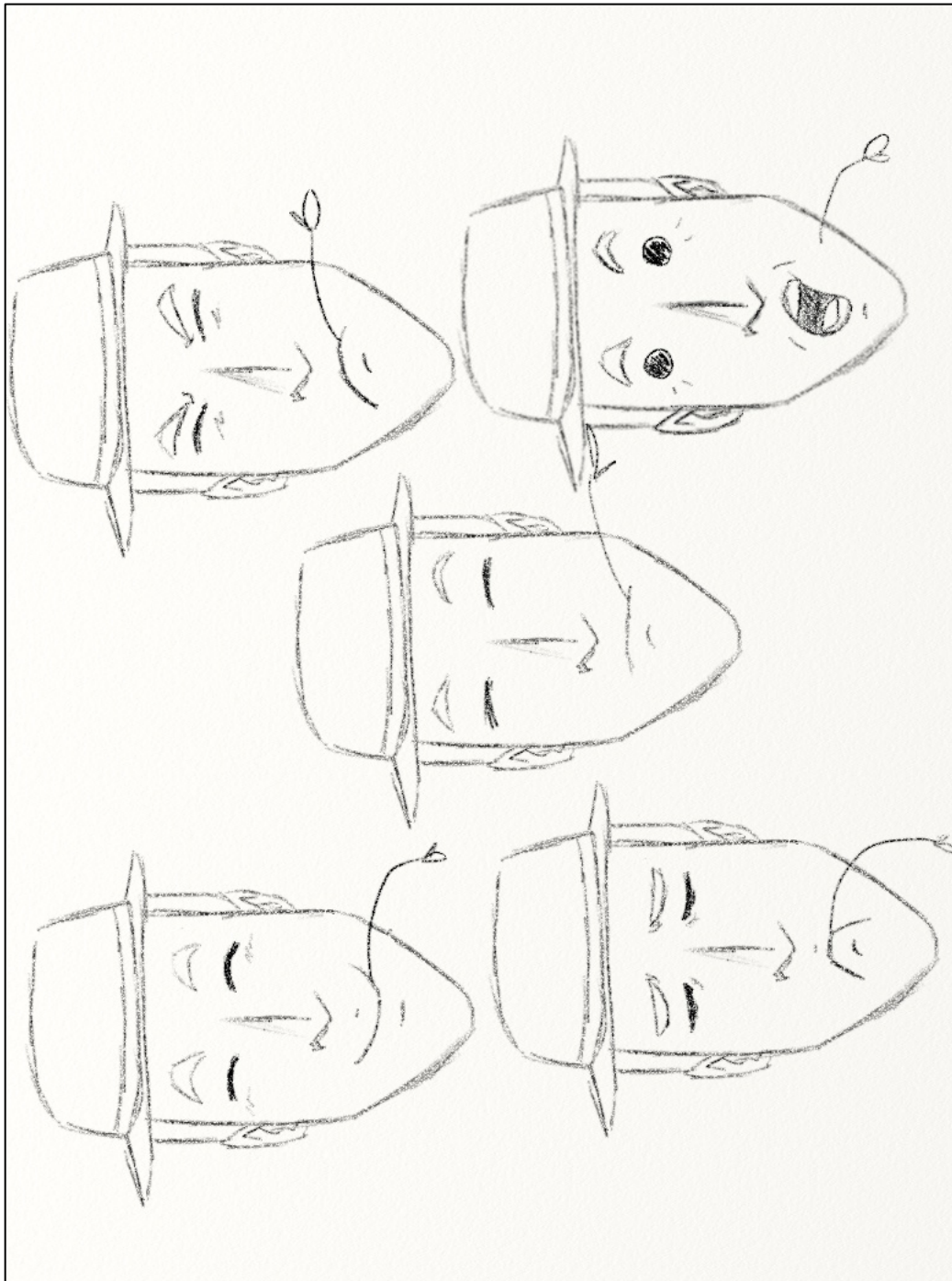


Fig. 4.61 Farmer all expressions.

4.4. Scene Design

I have done almost all the scenes from my imagination, but sometimes it was not enough and I had look for references.

I have searched references specially for designing King's Castle from outside. It was a very complicated part so I wanted to made it look fantastic and magical, but with realistic basis. After lots of research, I have chosen some the Castles that I like the most for inspiring my Castle design:

Neuschwanstein Castle is a 19th-century Romanesque palace located in Bavaria, Germany.



Fig. 4.62 *Neuschwanstein Castle.*

I like this castle due to his shapes, roofs and towers, it iss like Disney castles, and looks fanciful.

Mont Saint-Michel Castle, is a rocky tidal island, located in Normandy, France. The castle and the village are sited into the island. It seems to be the castle that inspired Disney's Tangled creators. I have researched about it and effectively they were inspired by this castle/island.



Fig. 4.63 *Mont Saint-Michel Castle.*

This castle seems taken out of a fairy tale, I like the shape of the walls and the island. It has trees and vegetation, so it looks lively compared to other antique castles.

The Château de Chambord, is located in the Loire Valley, in France. It is famous for blend traditional French medieval forms with classical Renaissance structures.

Maybe this is the less magic-looking castle of the ones that I chosen, but I like the shapes and the fact that is really majestic.



Fig. 4.64 *The Château de Chambord.*

The Hohenzollern Castle is a castle about 50 kilometres, located in Stuttgart, Germany.



Fig. 4.65 *The Hohenzollern Castle.*

I like the roofs and the shapes with a lot of towers. What I like the most of the castle is the place where is located, at the top of the mountain rounded by forests.

All the castles are kind of similar, and I want to use them as a reference for creating the Castle of my animated Short.

Doing the scene designs has helped me a lot to structure the world and the events of the short.

4.4.1. Kingdom Atlas

When doing the designs of the different scenarios, I realized that it was necessary to situate the different locations, in order to make a logical development of the plot. If I know where the different locations are, I can tell in which direction is going every character, and how long takes to him arrive from a place to another.

That is why I have created the Kingdom Atlas, a map of the different locations that appears in the short. Also I added some locations that are not visible in the short. For example, the village, it does not appear in the short but I want to situate it in the map due to it is important for the development; the farmer comes from there. Also it makes the whole world look consistent, normally kingdoms have villages, normally they are located near the castles.

Scale:

Although it seems a very large kingdom in the map, it is not so big. The distances are relatively short. From nearly all the places of the Kingdom you can see the Castle.

Additional Information:

You can see that there are two symbols on each side of the word “Atlas” in the Figure 4.67. This symbol is a “spiral”, and is the symbol of the Kingdom; it comes from very distant times.

Although the symbol is not representing the Realm and the King court, they use it in their flags and ornaments. The symbol represents the wind, the water, life and nature. It represents the flowing of life and time. It is like a spiritual symbol. In this world, magic is not a normal thing, but it exists. Normal people do not use magic and it is not common to see magic nowadays. But they know that is possible and in some corners of the world there is some people, clans, and specific creatures that are involved in magic stories or have magic powers. Others are just legends and are not real. That is why sometimes people do not trust entirely the legends until they confirm with their own eyes. The Green lines on Figure 4.67 represent the principal paths of the Kingdom, those that are visible and transited. The red paths are those hidden paths, not transited, those ones of natural existence.

This design is a “location map”, so it does not represents the exact topology of the ground and the lands. But it’s actually quite similar, at a great scale. The Rivers in this part of the world are underground, so they take their water from wells.

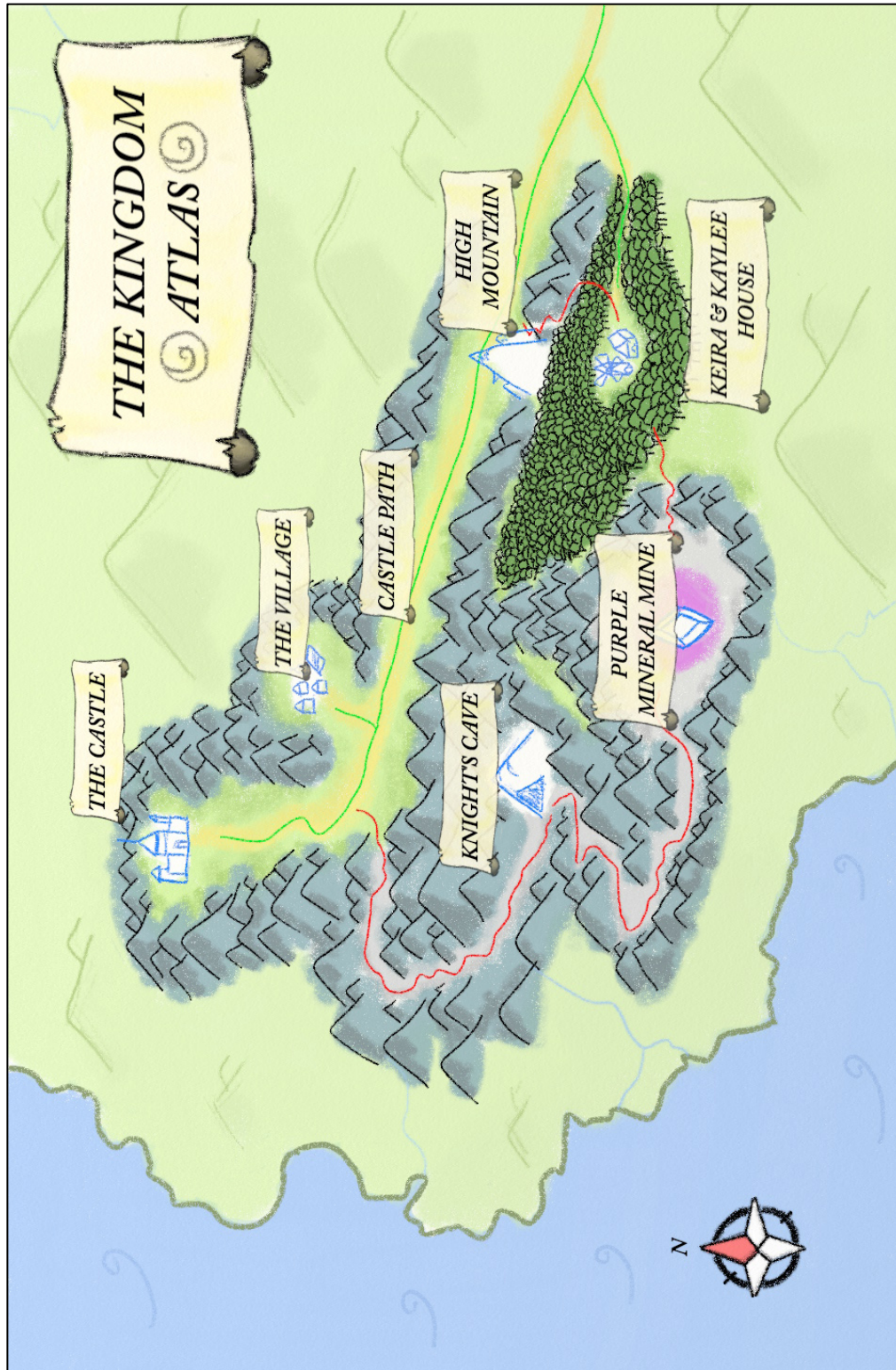


Fig. 4.66 Kingdom Atlas Map.

This is On Figure 68 you can see the actual flag of the Kingdom; it's the “political” flag, which is part of the realm and the King's court. It has the colors of the realm, which are yellow and green mainly, with also blue. It also has the spiral symbol on it.

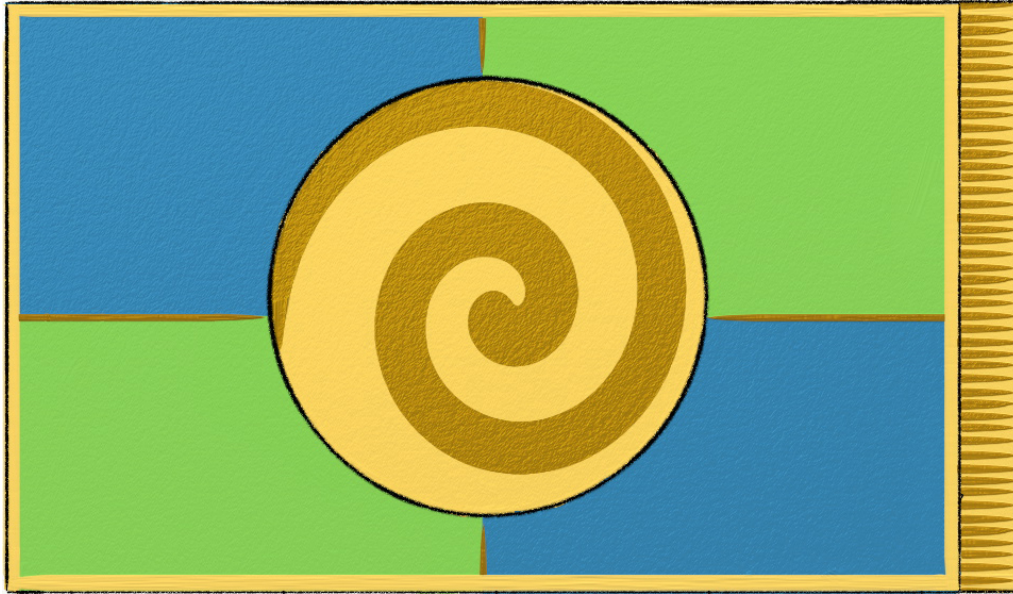


Fig. 4.67 Kingdom's Flag

4.4.2. Castle Library

Although is called “Castle Library” it's not the main library of the castle, it's more a nook where the prince Ewan spends his free time, reading books and imagining histories.

Scale:

It's bigger than a normal room, in general, all the rooms on the castle has high roofs and are very spacious. This looks less spacious due to is full of books, tools, and junk.

Additional Information:

There is a picture on the right side of the room. It is the picture of the previous King, the father of the actual King and grandparent of prince Ewan. He is dead already, and this is a memorial picture of him. In the table we can see the book of the “Legend of Ancient Race”, the book that tells the story of the people with Purple eyes, which had the ability to transform in legendary beasts when looking to the purple mineral.

This had to look as an occult place, with soft light and darkness around the room. Also it has to look cozy, like a hut in a tree. Must have a magical and mysterious feeling.

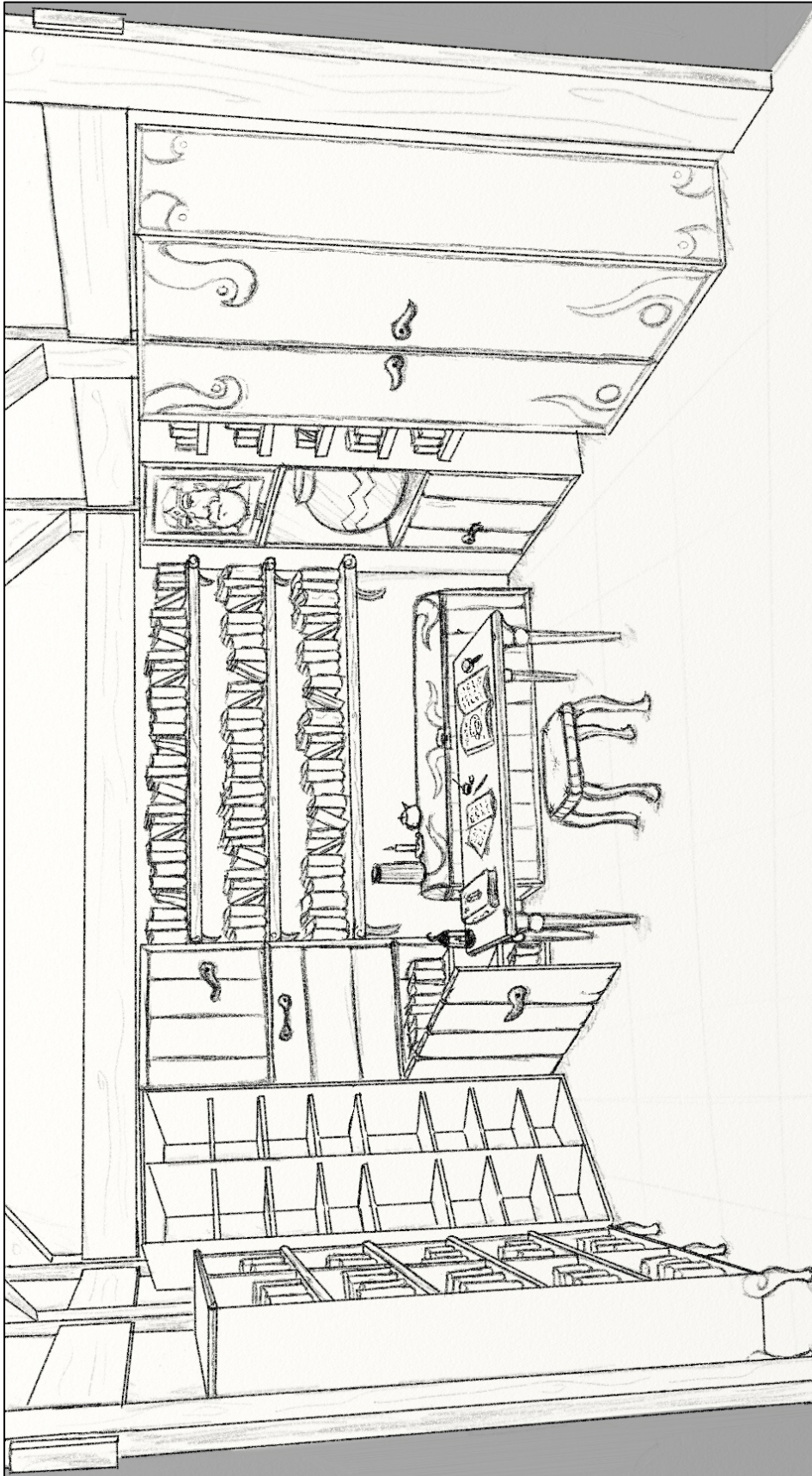


Fig. 4.68 Castle Library Design.

4.4.3. Castle Corridors

The corridors of the castle connect the different rooms. There are not so many corridors because the castle is not immense, but they are really huge corridors. This is the main corridor and goes through the main part of the castle.

Scale:

As you can see on Figure 4.69, there are two guards, who are 1,70 meters approximately, so the roof is so high and the corridor quite wide.

Additional Information:

The first door starting from the left, is the “Castle Library” door, the next and bigger bifurcation is the entrance to the Throne Room. That is why there are two guards watching the door.

About the design, the corridors of the castle looks polished, shiny and classic. They are very clean and bright.

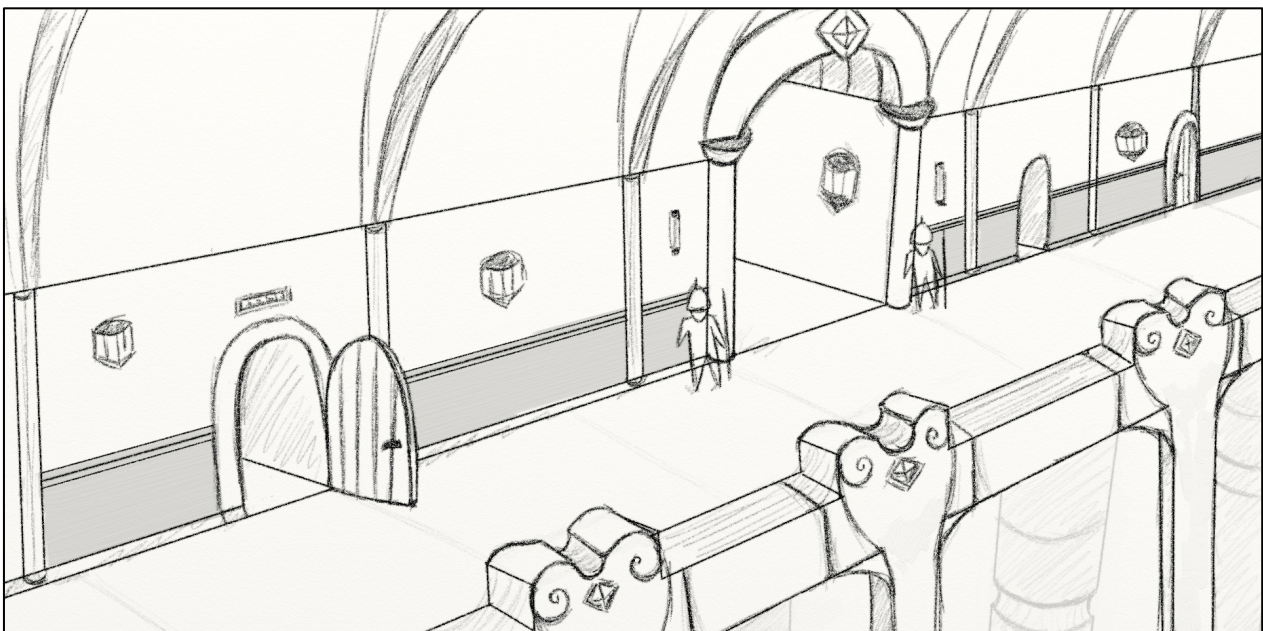


Fig. 4.69 Castle Corridors Design.

4.4.4. Throne Room

This is the Throne Room, here the King receives important visitants and does the court hearings. Normally there are two major guards at each side of the throne, when the King is in the room.

Scale:

As you can see on Figure 4.70, I have drawn a human at the entrance of the room, so you can see is a huge and majestic room in reference to a standard sized human.

Additional Information:

The decoration of the room represents the kingdom, the mountains and his people. Also it represents the nature, with two spiral symbols representing wind, water, and flowing of life. The decoration of the throne is representing the sun with the throne itself and the sunbeams.

The different rooms of the castle share some elements that almost every room have in common, so although this room is majestic than others it looks as part to the castle with the same style of the other rooms.

About the design, the Throne Room has to look majestic, with golden ornaments and bright materials, with kind of grandiose look. The windows let the line in illuminating all the room. For the moment the windows does not have any kind of special glass or drawings on it.

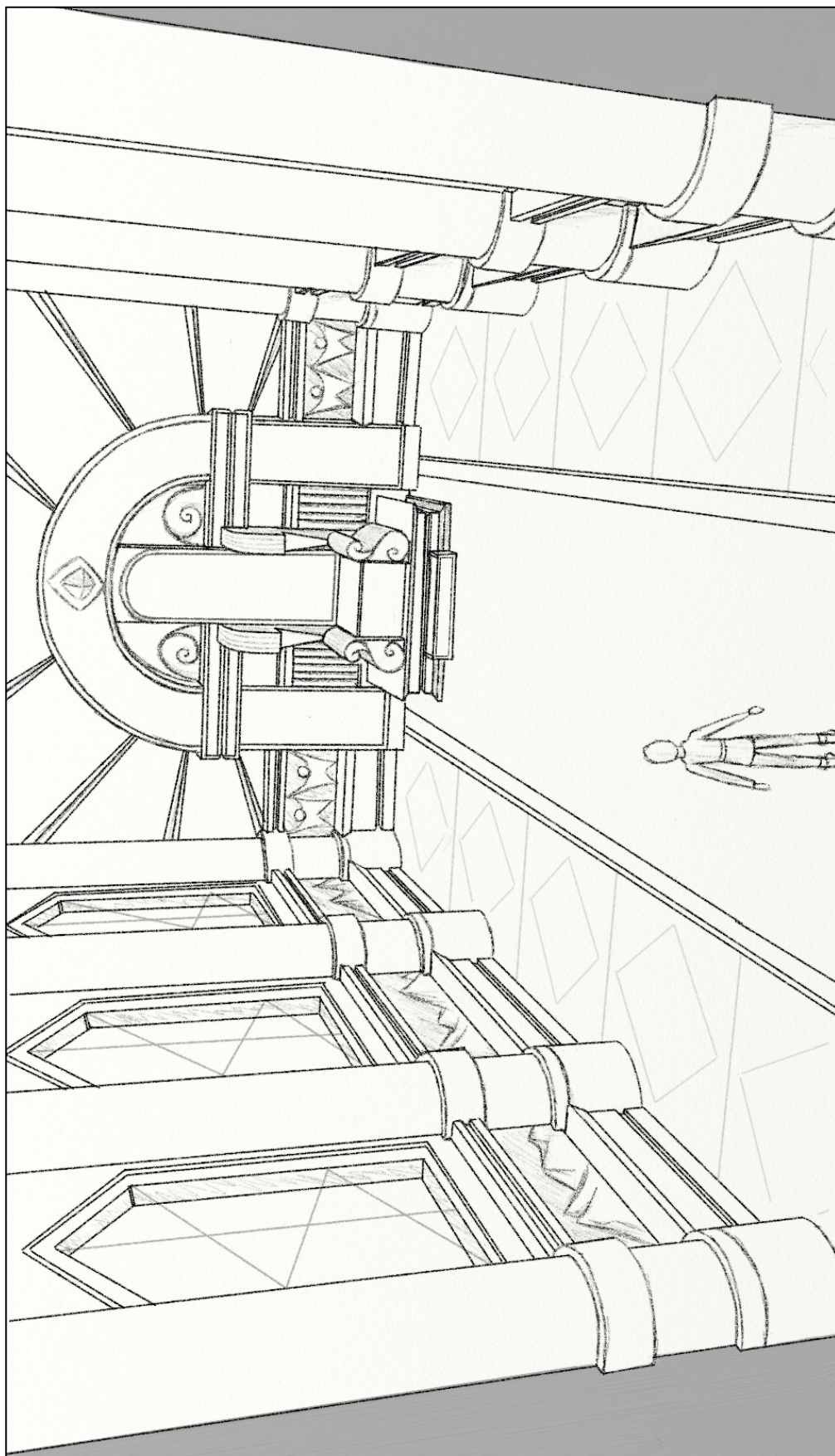


Fig. 4.70 Throne Room Design.

4.4.5. The Castle

On the Figure 4.71, you can see the main design of The Castle. That was very difficult to design, after looking for a lot of references and using a lot of imagination this is the result. I wanted to achieve a fairy tale Castle style. It is a very big castle, but is not enormous.

On the Figure 4.72, you can see the distribution of the Castle Courtyard. You can see the complete top view of the Castle. Also you can see in low opacity the secret passage, which uses the Black Knight to enter the Castle.

On the Figure 4.73, you can see the part behind the Castle. The entrance to the secret passage is between the rocks and behind the trees. Also you can see the big huge tower at the left side of the drawing, this is the tower where the Black Knight brings Kaylee after kidnapping her for accomplish his terrible plan.

Scale:

On Figure 4.71, you can see a very small window at the right side of the Main Castle's Door; there you can see a little head, which is one of the guards. So the Castle is very big compared to human size.

Additional Information:

The Secret Entrance is hidden behind the Castle, only accessible for someone who knows its location. In the design the entrance is more visible due to I wanted to highlight it.

There are so many Guards distributed for the entire Castle, especially on the vigilance points (towers, etc.)

About the design, the Castle has to look majestic and clean. Not like an old stone castle. It's a fairy tale castle.

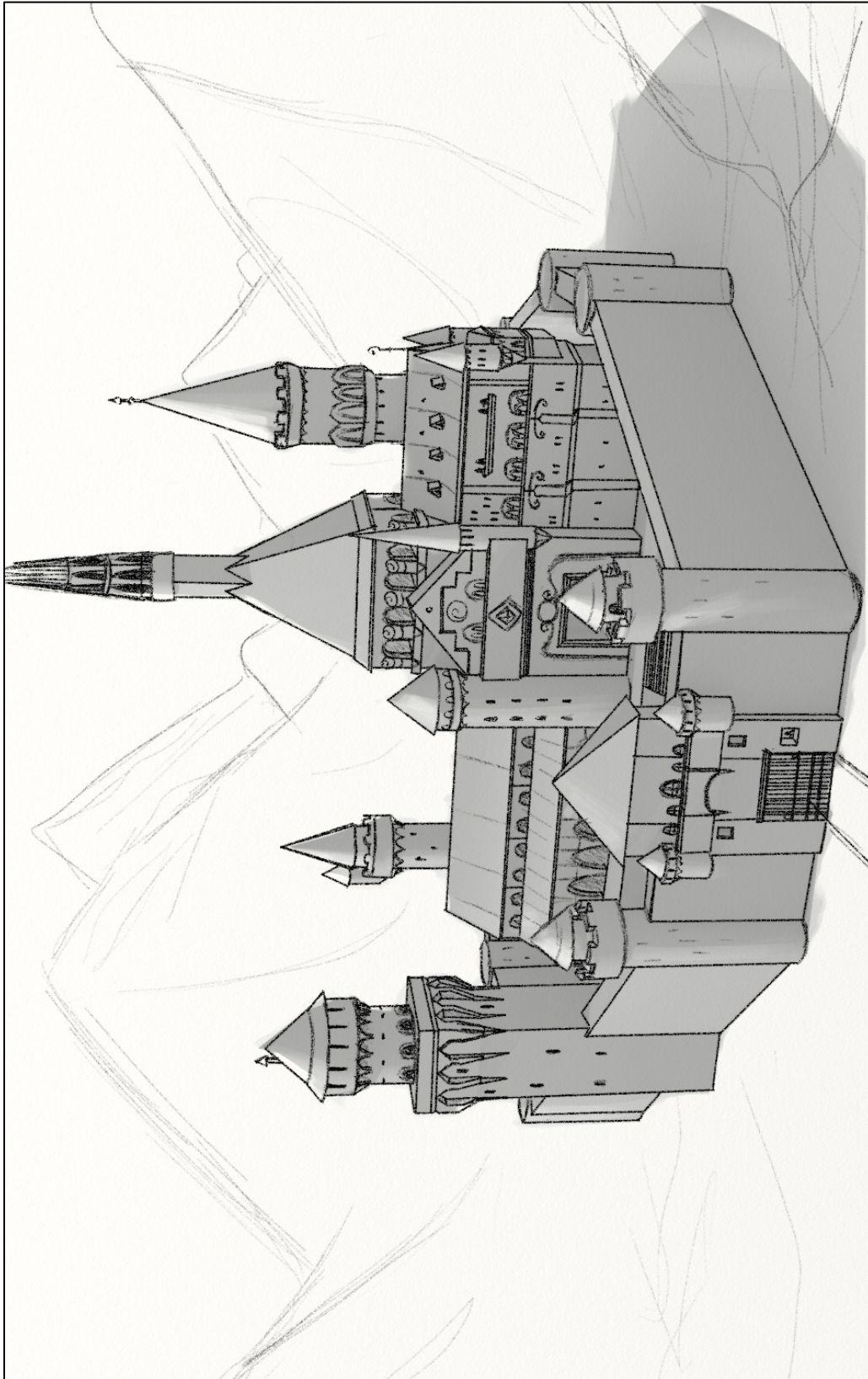


Fig. 4.71 The Castle Main Design.

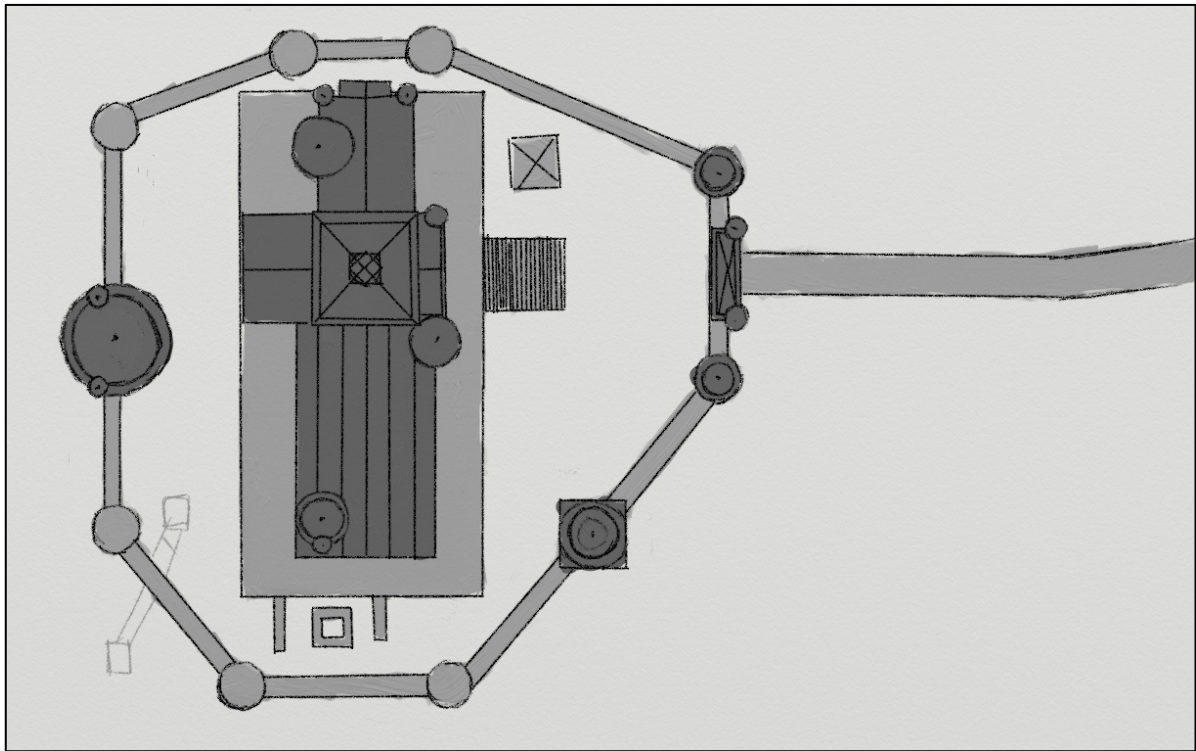


Fig. 4.72 Castle Courtyard Design.

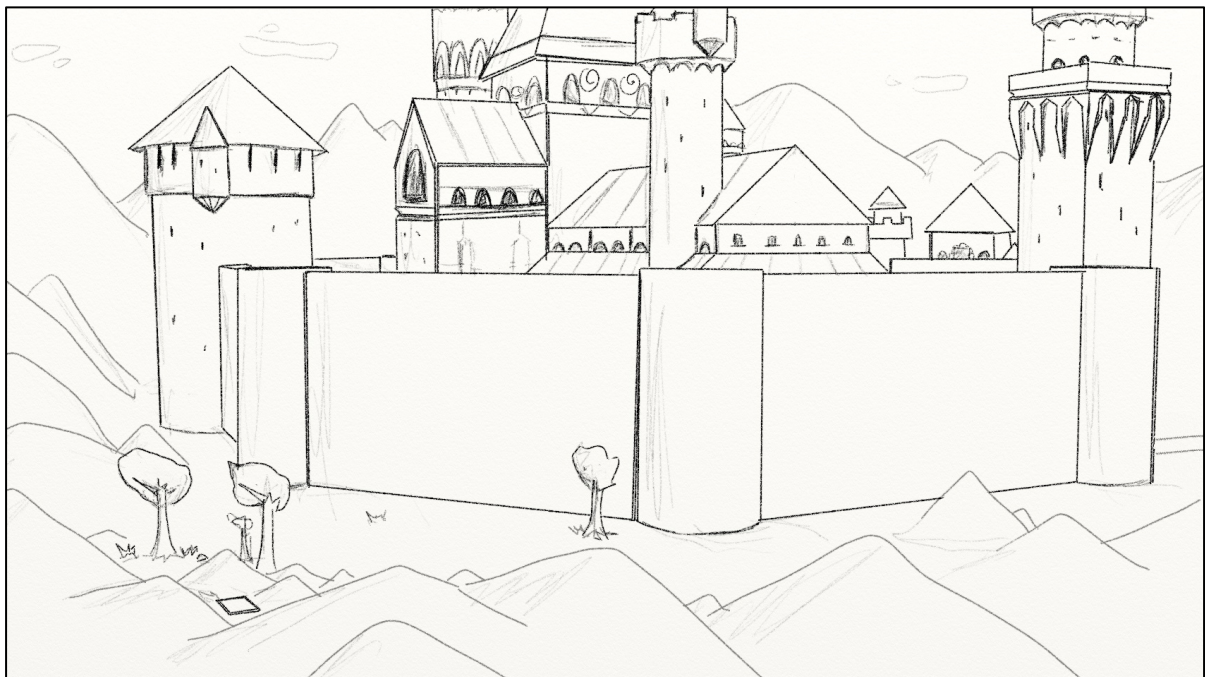


Fig. 4.73 Behind the Castle Design.

4.4.6. Cave Access

This is the Cave where Prince Ewan goes after the King exiles him (Knight's Cave). As you can see it's not so far from the Castle because the Castle is at the Background.

Scale:

The access to the cave is a bit small, a tall person has to crouch a bit to enter, but then the cave is huge.

Additional Information:

There are a lot of mountains in the Kingdom; this is situated on the mountains in front of the Castle. These natural paths also connect with the Purple Mineral Mines, which are also in the Mountains.

Is a hidden place, it's not visible unless you get too close to the access. It is the perfect cave for the Black Knight.

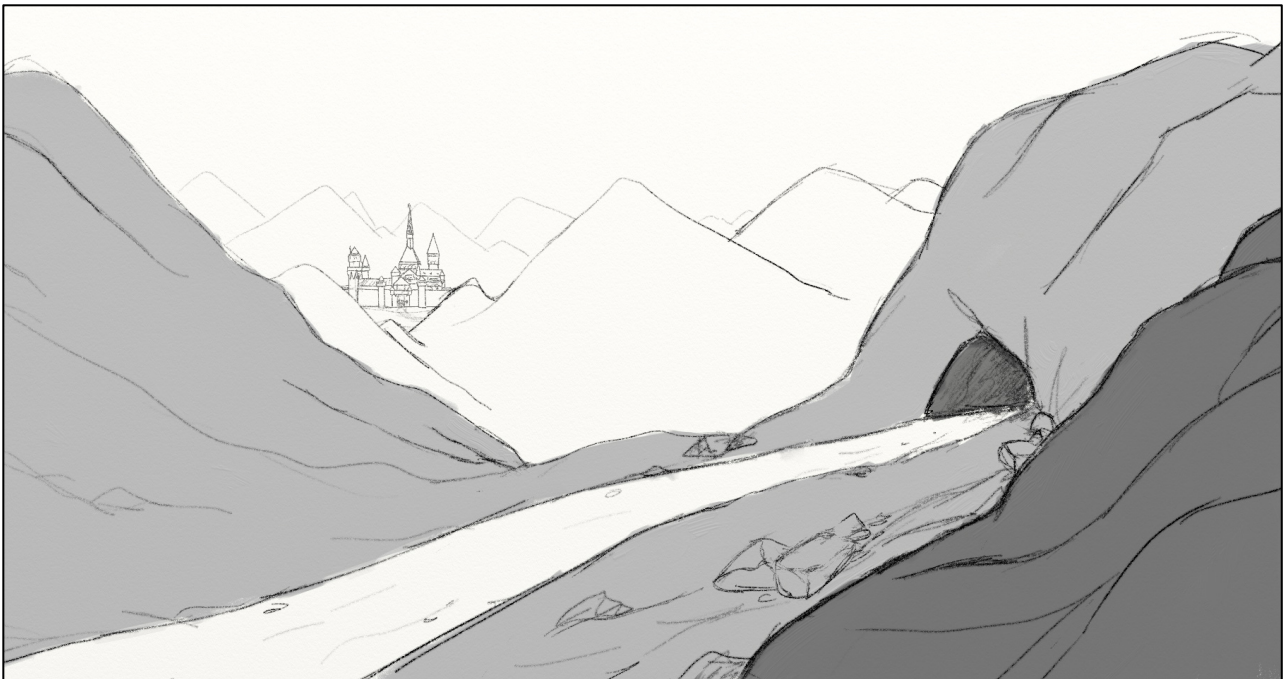


Fig. 4.74 Access to the cave Design.

4.4.7. Knight's Cave

On the Figure 4.75, you can see the Cave when Prince Ewan found it for the first time. It's entirely natural. There is a stone in the middle, which looks like a throne.

On the Figure 4.76, you can see the Cave after years of Black Knight (Ewan) living inside it. It has all the necessary things to live. Now it's Black Knight house and lair.

Scale:

It is quite big, the throne-stone in the middle has the size of an actual throne, and the cave is so deep. The roof highness varies depending on the region of the cave. It's quite high in some areas.

Additional Information:

There's a lot of junk in the present time cave, the Black Knight bring there all the things he stole from the villages, and some other stuff he found eventually. It's a little mess with a lot of things but with some kind of order.

It is a hermit cave, so it has to look like that, dark and with loots of junk and stuff. In the past version it has to look pure and natural. It's a beautiful cave because it has strange natural forms.

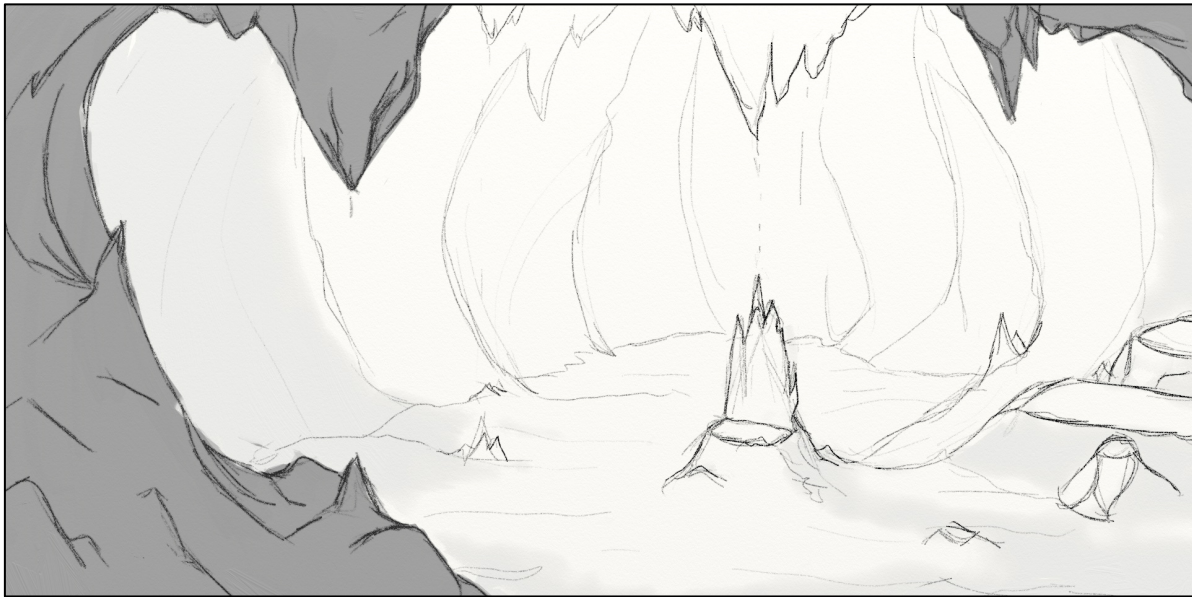


Fig. 4.75 Past Cave Design.



Fig. 4.76 Present time Cave Design.

4.4.8. Keira and Kaylee House

This is Keira & Kaylee House, is located into the forest, quite far from the Castle. They live there and the forest offers them protection and tranquillity. It connects with the main path, which goes to the castle. Although it's kind of hidden because the forest is so leafy. The trees act as natural fences for the area.

Scale:

The main door of the house is about 2 meters, so it's a normal sized house, not so big.

Additional Information:

The Forest is a Greenwood, it has a lot of tall trees. There is this big clearing where Kaylee and Keira lives. It is a very cozy place. The forest is very peaceful; it's not a dangerous place. They live in the forest, and they take nearly all the supplies they need from nature. But sometimes they go to the village, to sell and buy stuff in order to get what they can't produce in the forest. When they go to the village, they wear costumes in order to hide their purple eyes to the normal people. The design has to look magic, protected, with a strong fairy tale feeling. It has to be an idyllic place.

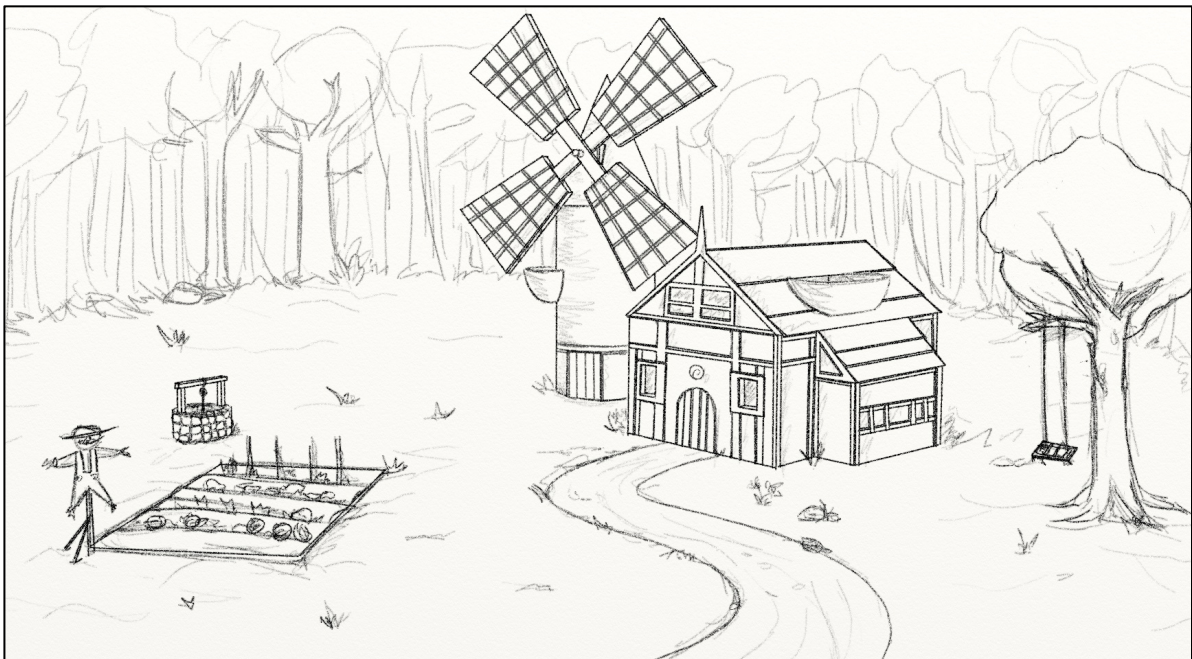


Fig. 4.77 Keira and Kaylee House Design.

4.4.9. Purple Mineral Mines

On the Figure 4.78, you can see the path that goes from Keira & Kaylee House, to the Purple Mineral Mine. It's a very steep path because the Mines are on the top of the Mountains.

On the Figure 4.79, you can see the Purple Mineral Mines. For the normal people, the Purple Mineral is just a piece of jewellery and decoration. For some people is kind of spiritual stone, due to the legends of the ancient race.

Scale:

The Mines are very huge. As you can see I have drawn a person at the bottom left of the image.

Additional Information:

The Black Knight manages to steal one big stone of purple mineral from this mine, and brings it to the castle in order to accomplish his terrible plan.

It is a very huge scene, so the design needs the inclusion of very small details in order to represent how big is the entire mine.



Fig. 4.78 Mountain path Design.

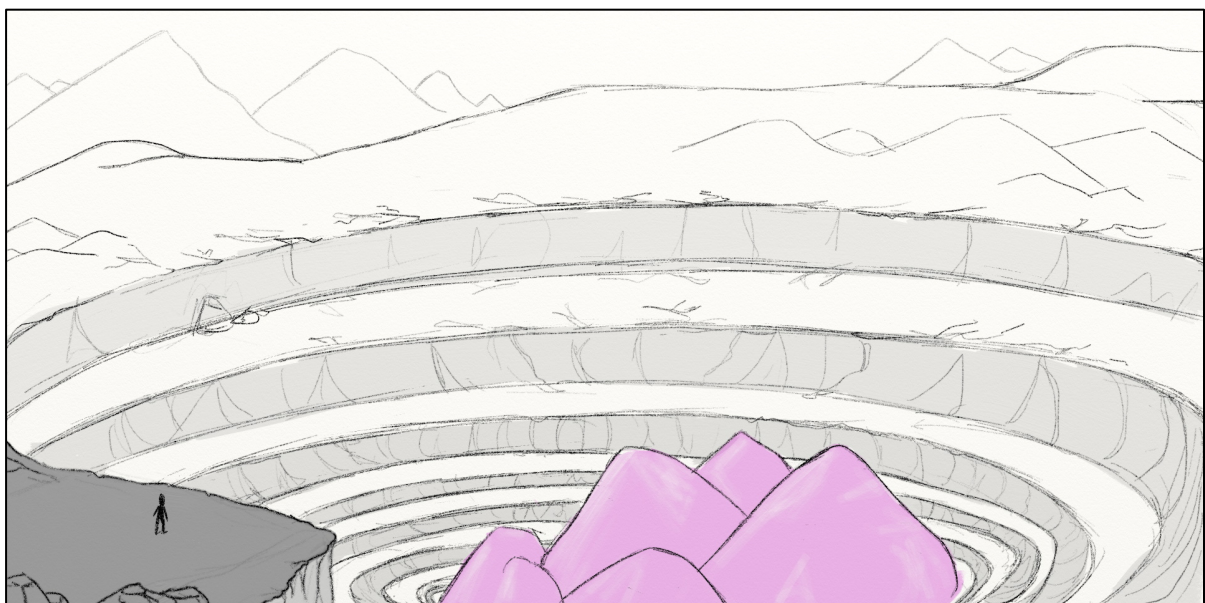


Fig. 4.79 Purple Mineral Mines Design.

4.4.10. High Mountain Views

This is what you can see from the High Mountain, which is near Keira and Kaylee House. This is the place where Keira goes when the Black Knight kidnaps her sister. From there she can see the entire path to the castle. Then is when she sees the Black Knight going to the Castle with her sister. It's a good place to watch much of the Kingdom.

Scale:

The High Mountain it's not so big but it's very high. You can see the Castle in the distance.

Additional Information:

The Kingdom has a lot of Mountains, but it also has a lot of valleys and little grooves of trees.

This is a General shot with not much detail; the scene has to look alive with trees, valleys and nature. The mountains are also important, but there are no only mountains.



Fig. 4.80 High Mountain views Design.

4.4.11. Castle Path

“Castle Path” is the major road of the Kingdom; it crosses all the kingdom mountains and gets into the Castle, it’s not a natural path, human created it.

Scale:

It’s not quite wide, but its quite long. In the Figure 4.81, you can see the castle in the distance, in the left side of the drawing.

Additional Information:

It is a busy path, normally there’s always crossing the path. You can find Merchants, farmers, people from another villages, travellers, etc. It’s also the way to leave the Kingdom.

In the design I have done only a little fragment of the entire path.

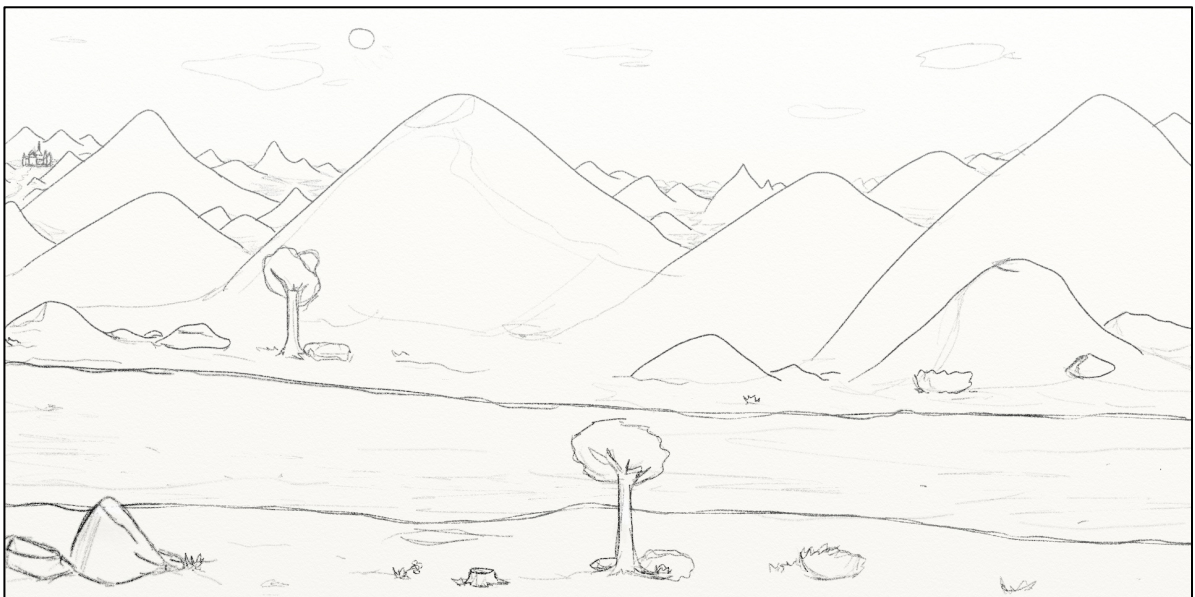


Fig. 4.81 The path to the Castle Design.

4.4.12. Castle Outskirts

This is the end of the path, which goes to the castle crossing the entire Kingdom. Mountains surround the Castle, so the only way to approach it is by the front side.

Scale:

On the Figure 4.82, you can see the castle in the distance as a reference.

Additional Information:

The mountains which surround the Castle are quite high, but not as much as the Castle is. The other mountains are quite short and we can see the crispy horizon after the short mountains.

The scene has to look alive with more trees, and vegetation. The mountains had to seem like an external wall, which protects the castle.



Fig. 4.82 Castle Outskirts Design.

4.4.13. Tower Room

This is the room where the Black Knight wants to commit his evil plan. It is located at the top of the huge tower of the Castle's back side.

Scale:

It's a big room with a very big roof. On the Figure 4.83, you can see a person at the top of the stairs as reference.

Additional Information:

As a room of the Castle, it shares the same decoration elements as the rest of the Castle. We can see also a big "Spiral Symbol" on one of the walls.

It has to look as a pretty room, is at the top of the tower and is where the last scene of the short takes place. So it has to be big and polished.

In the room there's also a hidden cage hanging from the roof. Also the big purple mineral stone is also hidden hanging from the roof.

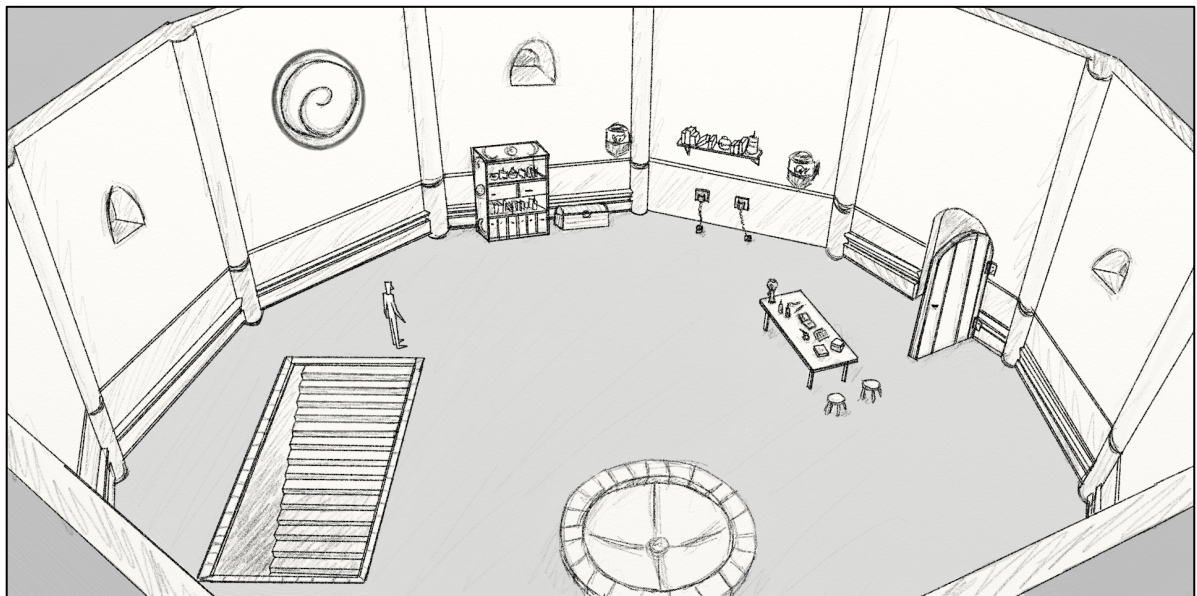


Fig. 4.83 Tower Room Design.

4.5. Graphic Style: 2D and 3D

Once I finished all the designs I started doing some definitive tests in order to decide which part of my short was going to be on 2D and which on 3D.

I started modelling one of the scenarios, and one of the Characters in order to test and see the viability of the process.

At the end, I did not need so many tests because the modelling of the character was decisive in order to decide how to do it.

I decided to model the Main Character of my short, Keira. I had quite experience modeling bodies and cartoon faces, so that had not been the difficult part for me, but I had no experience on clothing. Also I had very few experience with real hair. So it was quite a research process in order to learn how to do some things.

You can see all the process and research of Keira 3D Modeling under the “Annex VI” section.



Fig. 4.84 Keira 3D Modeling.

Although I like the result, I do not dominate the technique, so I do not have the same ease as when I design 2D characters.

As I am doing some kind of graphic novel, there is no need of 3D characters. Some kind of animation styles with strong camera movements need 3D characters but that is not the case.

Make a 3D character is an immense work, and I think I cannot reach the quality level that I have when designing 2D character. Also it took an immense amount of time, if you have few characters it works, but I have lots of characters so it is not the most appropriate way to do it.

I realized all of these obstacles when creating Keira in 3D.

Because of that, I started doing some tests with 2D characters integrated into 3D scenarios in order to see how all works.

After doing some tests I have concluded that my project is going to look better with 2D characters. I have more experience designing 2D drawn characters, so I think with this technique I can focus a lot more on the expressions, the performance, the artistic aspect of the short, and the quality of it.

I prefer to achieve a good quality product, rather than put a lot of effort into the technical part obtaining a poor result. I want equilibrium between art and technique. So I think the combination of 3D scenarios and objects with 2D characters, with the form of a visual novel, is the perfect way to achieve that. Also it makes my project kind of singular.

I will do the 3D scenarios with the Art Shader Cel Shading technique I have researched. With this technique the integration between the painted 2D characters and the 3D scenarios will result in a harmonious blending.

On Figure 4.85 you can see the main test I have done. It's the first scene of my short, after the book scene explaining the legend.

You can see the video of this test in the DVD, under the file: `MainAnimation_Test.mov`.



Fig. 4.85 Main integration and animation test.

4.5.1. Animation Style

I had several meetings with David Minguillón in order to decide how to focus the animation in my short.

I did a frame-by-frame animation test, but it was immediately discarded. It is almost impossible for a single person to animate a complete animated short frame-by frame within the time of the project and so many characters. Also it does not feel as a graphic novel. You can see the animation test in the DVD under the file: Keira_framebyframe_Test.gif.

At the end I have concluded that I am going to do my animation based on the “main frames” of each movement, the key frames of the movement. Just the same way I have done in the test of Figure 4.86.

I have to focus the animation only in the necessary elements. Not to put animation if it is not necessary to the scene/element.

In the DVD, you can found a discarded test I have done before the Main Animation test of Figure 4.85. In this discarded test there are lots of unjustified camera movements that result in a very strange and crazy rhythm of the action. You can found this test under the file: Animation_Test.mp4.

I want to use the interaction of the 3D camera with the 2D characters in order to give life and movement to the scene, but not overloading it. Also I want to use layers, depth of field, as the basics of a visual novel/comic in movement.

I will do all the 3D scenarios and objects with CINEMA 4D, all the drawings and paintings with Artrage Studio Pro, and all the animation and integration with After Effects.

I bought this book for Christmas in order to help me with the drawings of my short. It has helped me a lot specially with the walking animations and the information about the Horses and other animals. Horse poses are extremely difficult to do without reference, and even harder if you have not done it before, so it has been a great help.

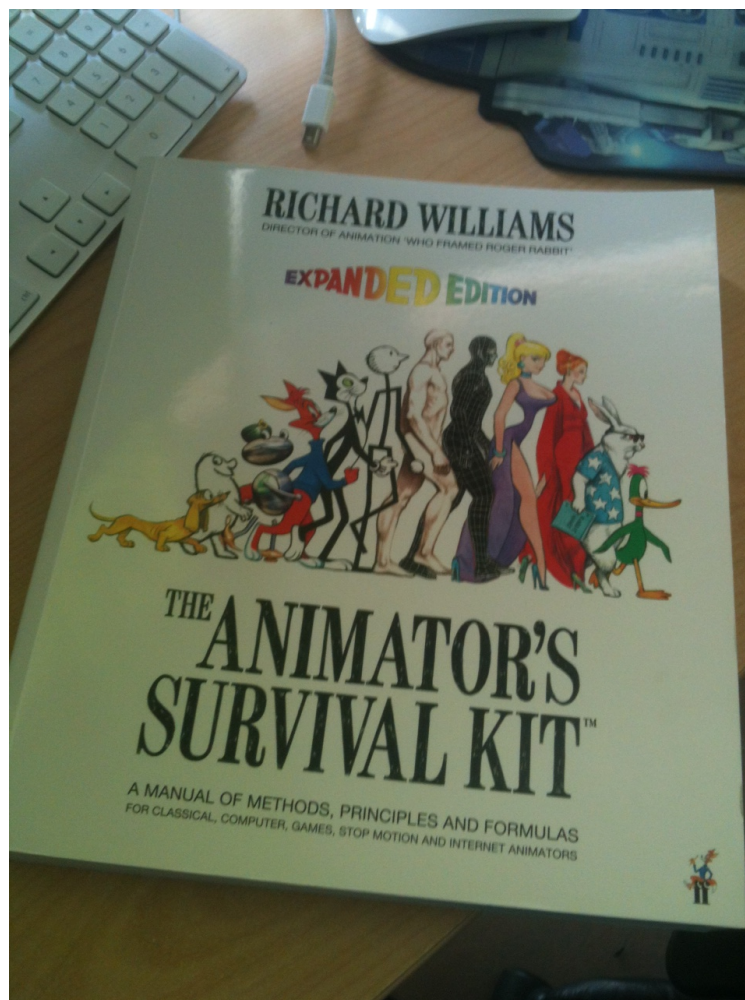


Fig. 4.86 The Animator's Survival Kit.

5. Production.

Once I get all the process set, I was ready for the production. I started doing a Layout of the entire short. But at the end, the Layout became nearly the final animation; this is the reason why I call it “Advanced Layout”.

5.1. Advanced Layout.

Doing the advanced Layout was a huge process. In this section I am going to describe what I have done generally for all the scenes, and then I will focus on the particularities of each scene individually.

The first I have done is the 3D modeling of all the scenarios with basic and simple shapes, some of the scenarios are almost the definitive version, but some other are just basic forms in order to represent the action of the scene.

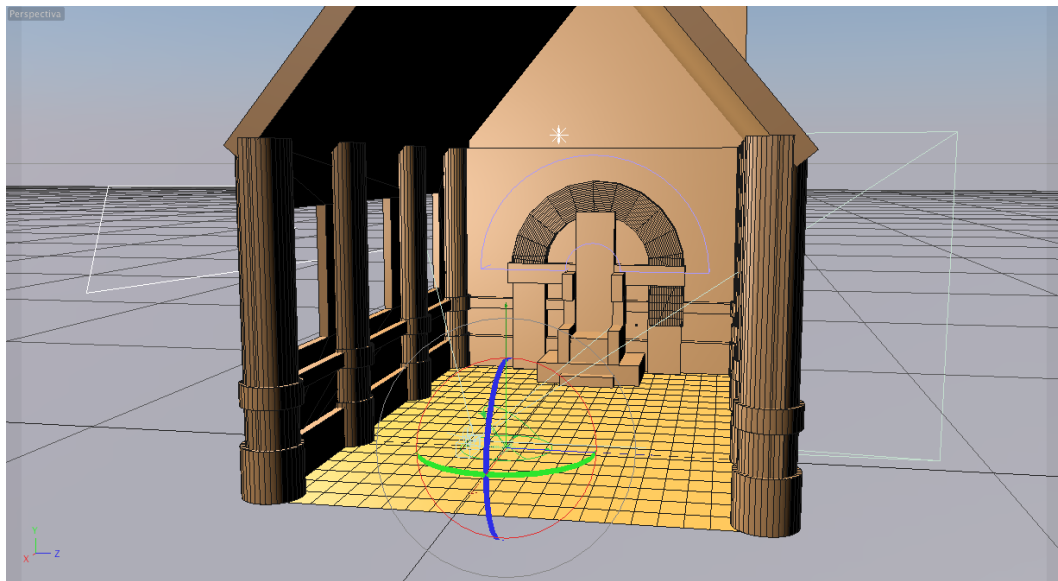


Fig. 5.1 Modeling of Throne Room with Basic forms.

I used the Human 3D figure object in order to have references for drawing the characters proportionated regarding to the environment. Once I had this figure references and the 3D scenarios, I have created real cameras in order to make the actual shots of the final animation.

Working with real 3D cameras had helped me a lot to do good composition referring to audio-visual language. On Figure 5.2 you can see the result of a shot.

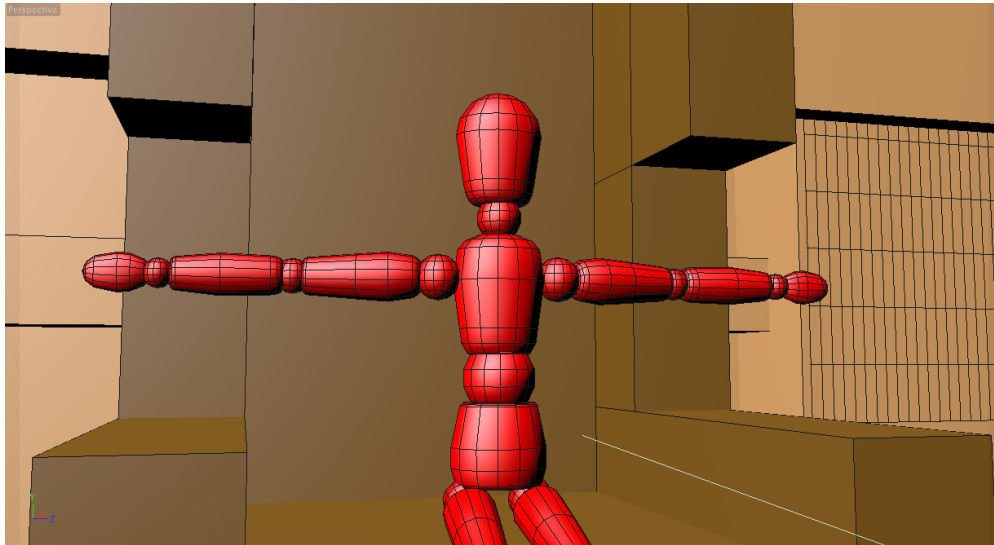


Fig. 5.2 Reference Human Figure Object and Real 3D Camera Shot.

On Figure 5.3 you can see the real 3D camera pointing to the Human Figure object I created as a reference. With this method I can create good looking shots for the 2D hand-drawn characters. It allows me to do different shots of the same space/action from different angles just as you can do in real filming with multiple-cameras. Also I am working with exact real 3D spaces and distances, so all becomes more consistent.

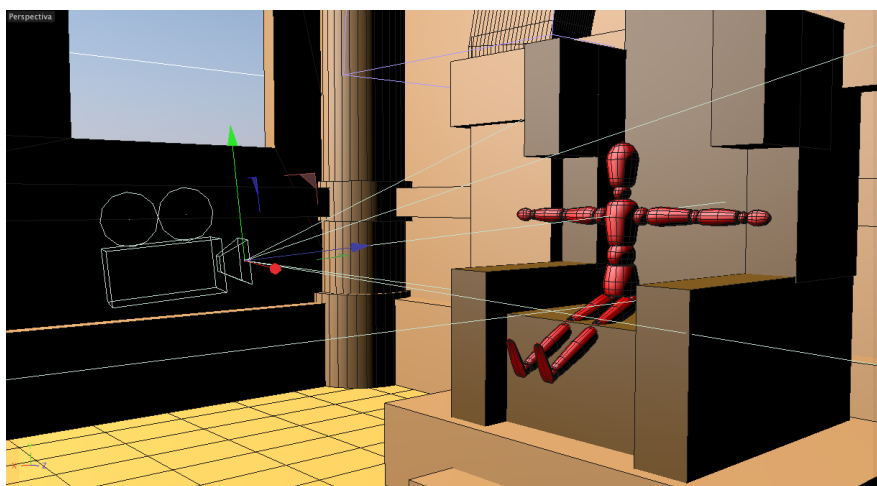


Fig. 5.3 Real 3D Camera creating a Real shot.

After setting the references and the shots, I analysed the scene and actions of the characters. In this analysis I established how many drawings were necessary for each action, and how many drawings were needed for each scene.

Using the Animatic, I calculated the timing of every shot and how many seconds I had for every scene. The timings I have done in the animatic have been really helpful during this process. Indeed all the Animatic have been very helpful and the base of all the Layout Process.

After setting the shots, the number of drawings and the time of the animation, I did the drawings and paint them with flat colors. As you can see on Figure 5.4, these are the different drawings of the shot I made on Figure 5.2.



Fig. 5.4 Drawing of the King into the Real 3D shot.

Once I had the Characters drawn, I put all the composition in After Effects, and I did the animation with fades between the different drawn poses of the Characters within the time set. ArtRage Studio exports directly the drawings in PSD, so I can import them directly in After Effects with all the separated layers.

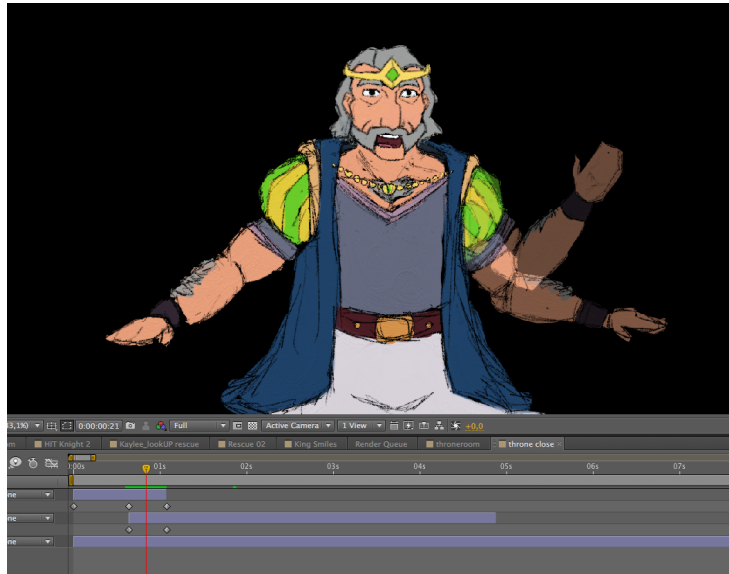


Fig. 5.5 King Fade Animation in After Effects.

When I started doing this process, I found a big a problem. When doing the fade from one pose to another the character appears translucent in the exact middle of the fade. I want the character to be 100% visible without transparency; the only part I want to be fading is the part in movement.

In Figure 5.6, the King is appears translucent, you can see the throne through him. But the only part that should be in fading is the arm, which is the part in movement.



Fig. 5.6 After Effects Opacity Problem.

After lots of research, I found the reason. In design programs opacity is no additive, is multiplicative. When the drawing of each pose is on 50% of opacity, the result is not 100%, is 75%.

So for getting the result I was looking for, I had to activate the “Alpha Add” blending option of After Effects. But that is not the only requirement. You have to put the two poses in a single pre-composition, because if there is a background image inside the composition the “Alpha Add” will not work.

It took me lots of ours until I solved this, because there is not many information about this in the Internet.

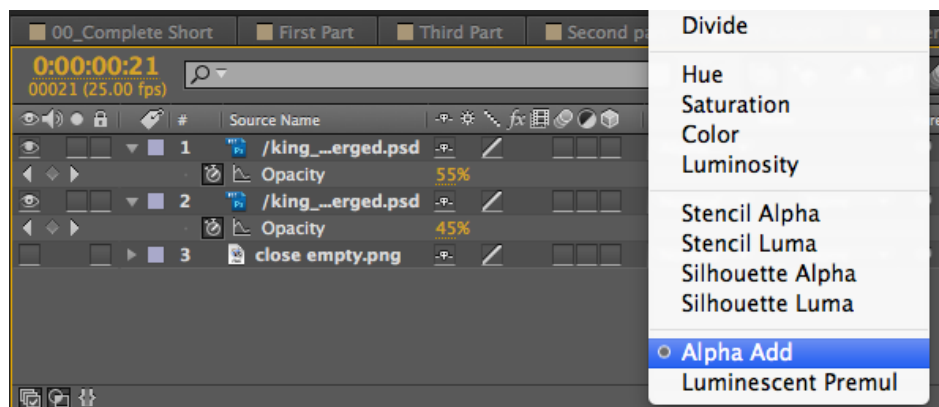


Fig. 5.7 Alpha Add Blending Mode.

With the Alpha Add activated 45% opacity plus 50% opacity results in 100%, so the only part that fades is the moving part.

After the animation is set in After Effects, all the process of the Advanced Layout is done. I have done this for every scene in the short.

At this point of the production, I realized that producing all the scenes of the short was going to be so much work, so I decided to make some trimmings on the last part of the short, as the teachers in Glyndwr said to me the previous year.

They said that it was a very ambitious project for a single person and recommend me to summarize the last part of the short. I didn't want to do that at the beginning, but at this point of the production I realized that it was going to be necessary in order to finish the project.

There was no time to produce the whole original storyboard/animatic. Fortunately the plot is not affected by this trim.

The major segment I have rejected is the part when Keira infiltrates into the Castle, instead of this, she enters directly to the castle some time after the Black Knight enters.

This is the process I have done generally for all the scenes, now I am going to explain the particularities of each scene individually in chronological order.

5.1.1. Scene 01: Book Intro

One of the problems I had is that this part of the story was too complicate to make it understandable without words. I didn't want to put any spoken word in the Animated Short, to make it understandable and international.

So I made some changes in order to make it understandable without words. I have done it with Motion graphics, and I have also simplified the story.

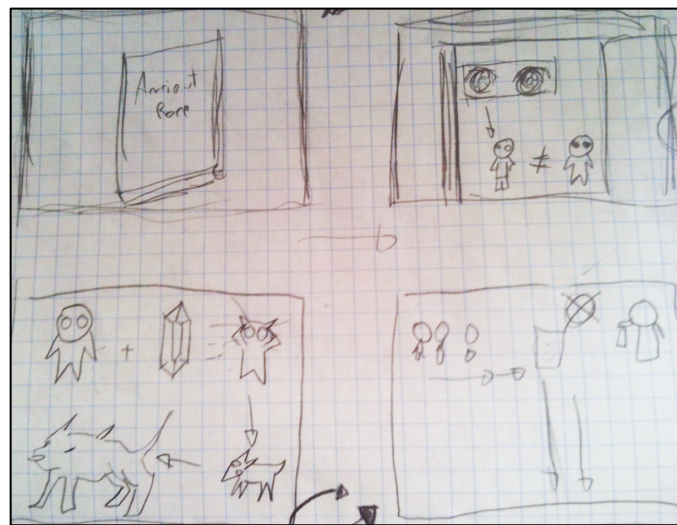


Fig. 5.8 Simplified Intro Sketch.

I simplified the this scene intro 4 panels, with 4 basic ideas:

1. The Book: The title of the short is “The Legend of the Purple Eyes”, so with this first shot you see that this legend is being explained in this book.
2. The Eyes: In the second panel I focus on the concept that there are normal people, and people with Purple Eyes, and they are both different from each other.

3. The Crystal: In this third panel I explain clearly that they transform in beasts when they see the purple crystal.
4. The Training: In the 4th panel, I explain that they train to control the powers, when they can't control, they return to the row and try again.

Also, I use colors to emphasize the main aspects, all is in black and white except the eyes and the crystals, which are purple.

I have done different tests with different people and they understand this part without problems. And although if you don't catch the behaviour of the crystal and this people, I made the rest of the story so that you can understand everything easily.

As in the short there is no real movement, all is made with fades, I decided to make the turning of the pages special, displacing the sheets of the book to the right, as you were reading the book.

I use some wiggle effects when the people with purple eyes transform. I animated the amount of wiggle in order to achieve the transforming effect.

In this scene the motion blur of After Effects is really important, it gives a nice look to the Wiggles and the displacement of the pages.

5.1.2. Scene 02: Castle Library

Nothing special about this scene in animation terms, it is done by the general process I have described on chapter 5.1.

As this is the scene of the main Animation/Integration Test, the 3D modeling is already definitive in the Advanced Layout. This is the most laboured 3D interior modeling in the entire animated short, because I used one whole week to do it.

The rest of the modelings in the short were done much faster because there was a lot of things to do and not much time.

All the objects are textured with the Art Shader Cel Shading technique; it is perfect for the pictorial result I wanted. I have painted so many textures; in Figure 5.9 you can see some examples.



Fig. 5.9 Painted Materials.

I have also done some specific textures in order to decorate different elements as the cupboard, the vase, etc. In figure 5.10 you can see the one for the vase decoration.

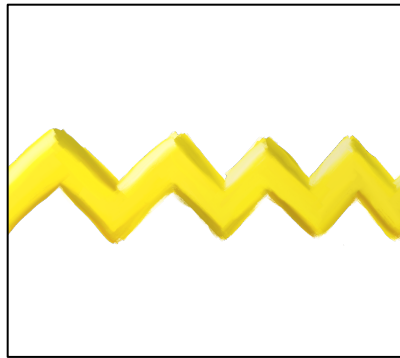


Fig. 5.10 Vase Decoration painted texture.

See Figure 5.11 for detail render of the stool.



Fig. 5.11 Stool detail render.

See Figure 5.12 for detail render of the furniture with the old past king picture:



Fig. 5.12 Furniture detail render.

In Figure 5.13 you can see the modeling of the room with clear lighting.



Fig. 5.13 Clear Castle Library Render.

I have changed the color of the books in the final version, because there were too much contrasted and unreal. I have also added a lamp and changed the lighting of the scene, giving to the room the look I described on the original design.



Fig. 5.14 Final Version of Castle Library 3D Modeling.

This scene has considerably more shots than the original scene of the Animatic. I wanted to introduce Prince Ewan in this scene, so I added some shots in order to make him perfectly visible to the viewer.

I also wanted to focus on his expression after reading the book; he thought that these stories are just legends and are not true.

5.1.3. Scene 03: Corridor Scene

In this scene I did only the basic forms of the 3D scenario for the Layout. The lighting is not definitive, is so bright to be an inside corridor.

The animation is based on fades between the different poses as in the other scenes. Also, in this scene each pose moves through the screen in order to enhance the running of the character.

5.1.4. Scene 04: Throne Room

In this scene I did only the basic forms of the 3D scenario for the Layout. The lighting in this room is definitive, is natural light coming from the right side of the room.

In this room the action elapses through different camera angles. In order to enhance the realism of the action one of the movements fades start in one shot and finish into another.

When the King raises his hand, the fade starts on the general shot but it finishes on the close one. That means doing 4 different drawings for one single arm movement. With this technique the action seems to be taking place in real time, in real space. The movement of the action helps to smooth the shot change.

The transition of this shot to the next is a wipe transition; I use this transition to emphasize the transition of time.

5.1.5. Scene 05: King Leaves

This scene is the first where we see Kingdom outsides. There is a lot of mountains in the exterior scenes of the short, but I have never done mountains in 3D, so I have done lots of research in order to see how to do good 3D mountains and to decide which is the best style for the mountains of my short. At the beginning, I started doing some tutorials about realistic mountains.

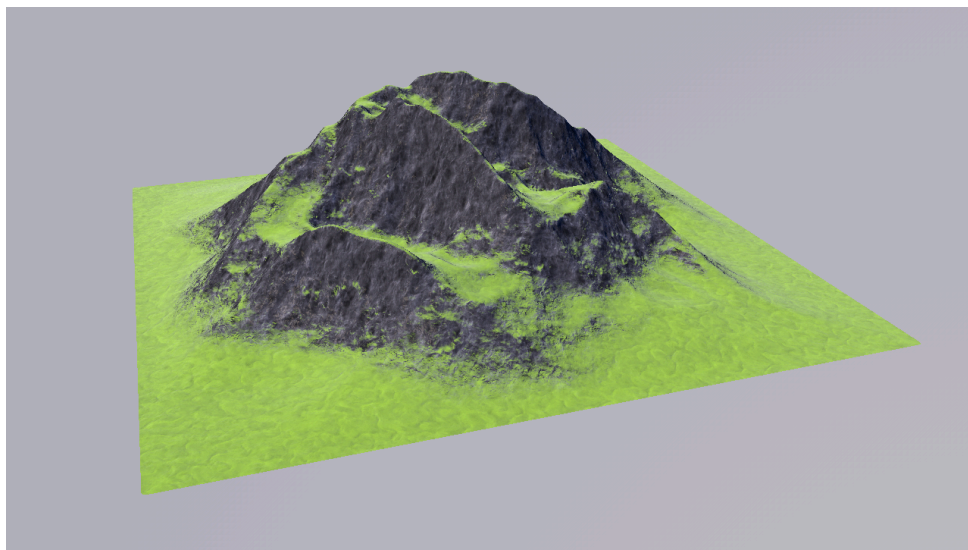


Fig. 5.15 Realistic Mountain Test.

This mountain is based on different layers of noises applied to a displacement map, it also have bump mapping and other effects. It includes some gradients in order to make the grass appear just in some areas of the mountain.

After learning the basics of doing mountains, I created a basic scene for the castle surroundings in order to make different tests.

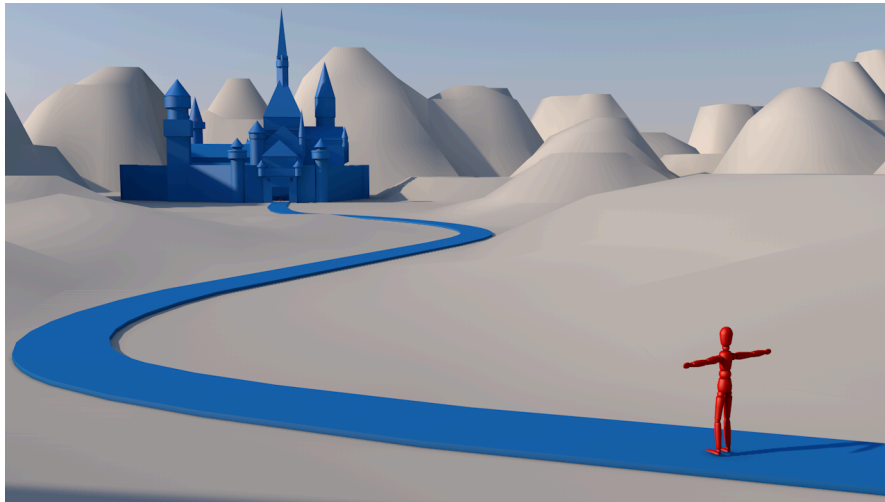


Fig. 5.16 Basic castle surroundings scene.

I applied the different materials to the scene, but the result was not the one I was expecting, you can see this in Figure 5.17.

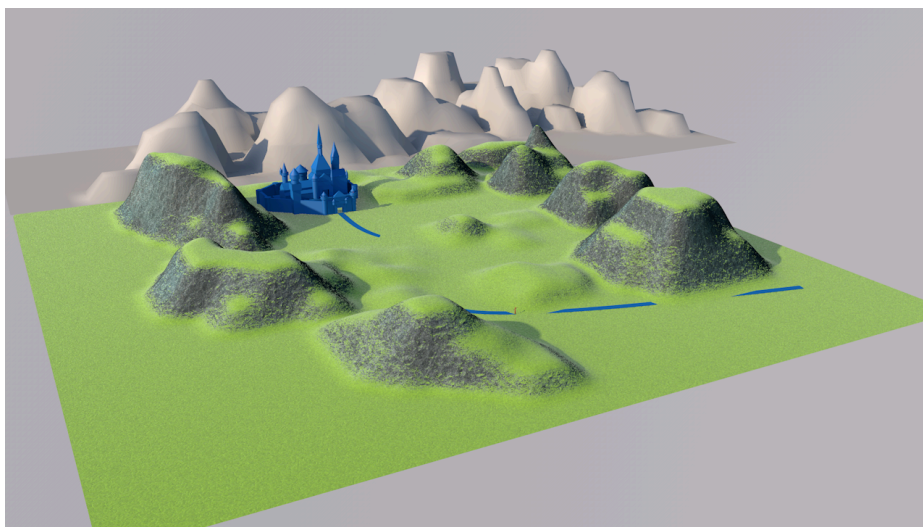


Fig. 5.17 Mountain materials applied to the scene.

I started tweaking the parameters, but the result was too realistic for the cartoon style I was looking for.

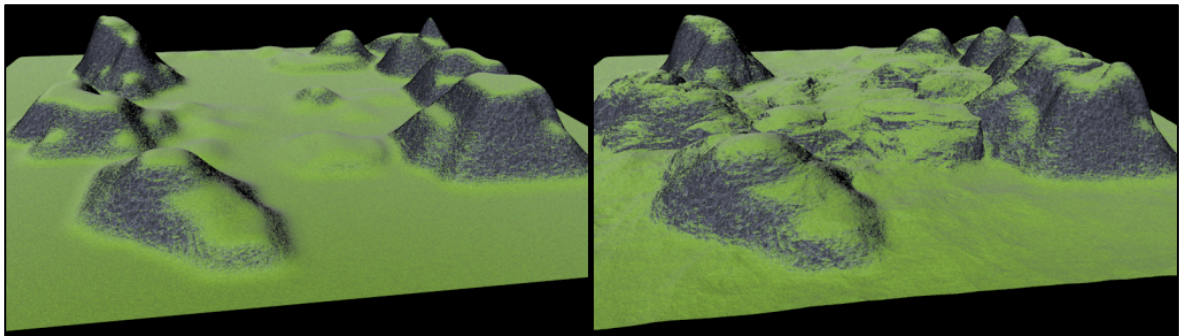


Fig. 5.18 Too much realistic mountains.

Then I started to test different artistic shaders, but applied with the techniques I learned to do mountains. I painted two different materials with ArtRage.

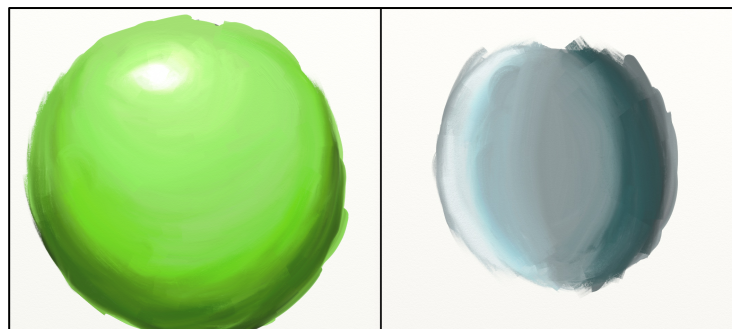


Fig. 5.19 Different Art Shaders.

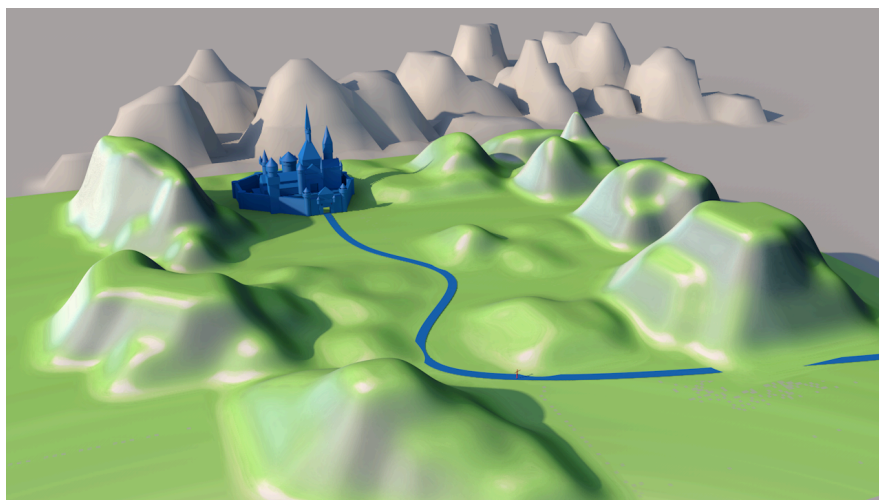


Fig. 5.20 Art Shader applied to Mountains.

I like much more this first results with the art shader combined with the basics of creating mountains. It matches a lot more the art and cel shader style I was looking for my animated short. But it still needed to improve. So I started tweaking with the art shader applied to a fractal modeling form.

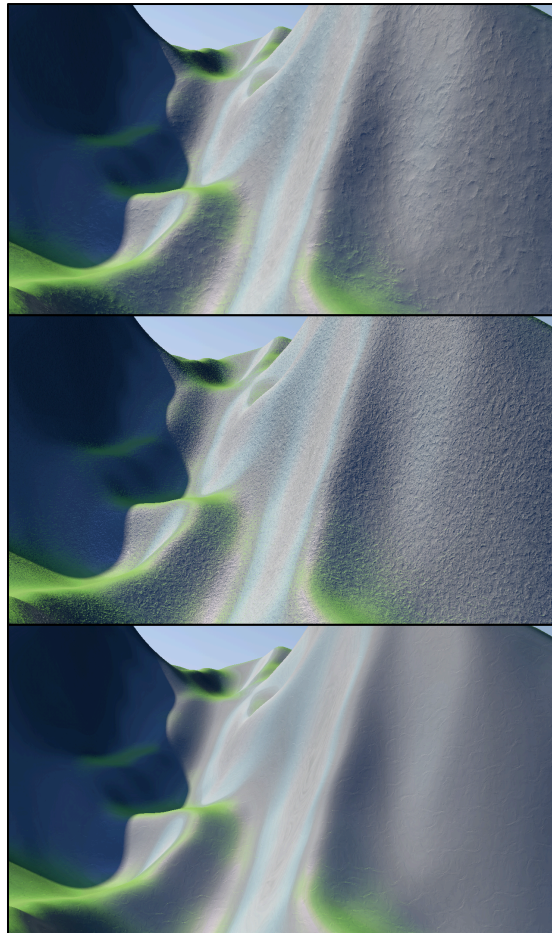


Fig. 5.21 Different Mountain Tests.

After some tests, I realized that displacement maps are not necessary for the style I was looking for. Because it increases the render time a lot, and it does not make a real difference. So I tried and applied different noises with bump mapping. This is the result after tweaking with the parameters, the noises, bumps, specular, etc.

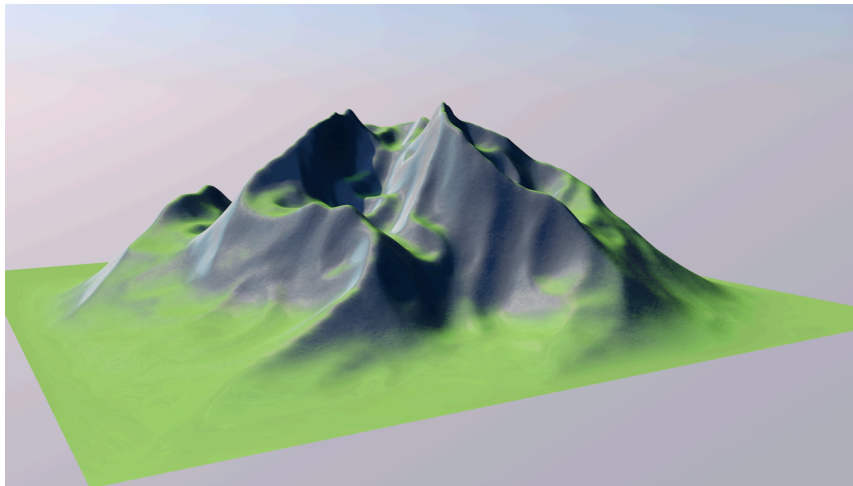


Fig. 5.22 Definitve Mountains.

Finally I get the style I was looking for my mountains, kind of cartoon but realistic at the same time, with brush style texture thanks to the art shader. It fits perfectly the general style of the short.

So I have remodeled the scenario, with more fractal mountains. See Figure 5.22 for a picture of the process.



Fig. 5.23 Definitive Castle Mountains Modeling Proces.

As the background of the physical sky was not to my liking, I painted a background sky in ArtRage and I applied it to a background object in Cinema 4D. With this sky the scene looks better and it fits better the style of the short.

In the Layout the castle is not textured. As the general views of the Castle always appear far from the camera, the 3D modeling is quite simple with no small details.

In the original Animatic only the King was present on this scene, I added a Guard because as a King, when he leave the castle he always has to go with some backup/protection, a Guard always escort the King.

The movement of the Horses is slow and lineal. The shadows of the Horses are in another layer and they are moving in the opposite direction in order to create realism.

5.1.6. Scene 06: Evil Prince

This scene starts with a zoom of the Prince into the Throne. As the moving camera is real 3D and the character is 2D, I have created the character separated into layers in order to make him adapt to the perspective of the camera.

There are five layers:

1. Body and Arms
2. Wrist Bands
3. Hands
4. Legs
5. Head

I put each part into a different 3D plane on Cinema 4D, and I rendered the zoom with the character in separated layers.

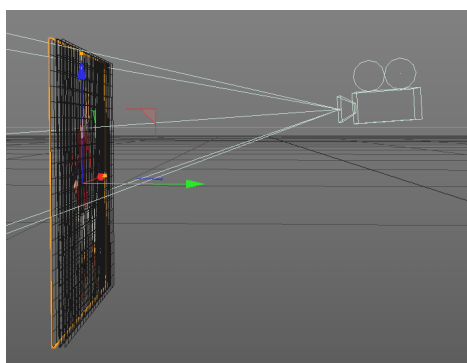


Fig. 5.24 2D Ewan separated into 6 layers.

From the front view it looks normal, and it adapts to the perspective of the camera when it gets closer, as you can see on Figure 5.24.



Fig. 5.25 Front view of 6 layer Ewan.

But if you look it from the side, each layer is separated a bit from the other in order to create this perspective-adaptation effect, as you can see on Figure 5.25.



Fig. 5.26 Side view of 6 layer Ewan.

In this scene, there is a film burn effect when the zoom shot ends. I have done this effect with the CC Burn Film Effect of After Effects, and following some of the steps of this tutorial:

- <http://vimeo.com/34713807>

Using the CC Burn Film Effect into a White Solid, and then applying some Alpha Matte compositions to apply color and transparency.

I tweak the random parameters of the effect in order to control which part of the screen burns. The last part of the scene that burns is the face of Prince Ewan when the camera zooms on it.

After this it comes the shot where Prince Ewan commits atrocities. In the original animatic this was so explicit, so I wanted to do it more metaphoric in the final version.

First I created some fire using the standard CC Particle World of After Effects, following this tutorial:

- <http://ae.tutsplus.com/tutorials/vfx/create-fairly-realistic-fire-using-cc-particle-world/>

It's not an ultra realistic fire, but it's perfect for the cartoon style of my short. I tweaked some of the parameters in order to adapt the fire to my necessities, making it clearer, and cartoonish.

This effect combined with the Burn Film transition of the previous shot combines perfectly.

After doing the fire, I have created the ropes in 3D with Cinema 4D. I have done the modelings, and I animated the falling movement with mograph. I use a step effect, and two groups of ropes, when the steps move over the ropes, they fall, the step effects are the yellow boxes that appear in Figure 5.26.

I illuminated the scene with a red focus light creating strong silhouettes. I set the “volumetric” parameter on, making the light visible and creating a red smoke atmosphere.

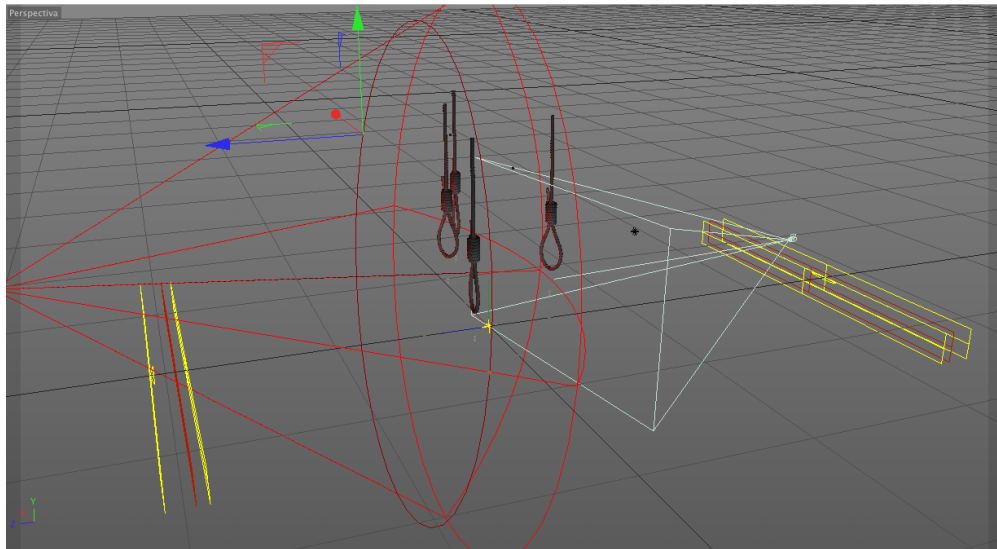


Fig. 5.27 Ropes Scene in Cinema 4D.

The modeling of the ropes is creating with the free plugin Reeper X, I created some splines with the form of the ropes and applied the plugin to create the rope texture. Then I attached the splines on the top vertex, and applied dynamics in order to create the natural swinging of the ropes.

- <http://www.codeworkers.de/garage-plugins-reeperx.html>

In Figure 5.27 you can see the resulting scene from Cinema 4D.

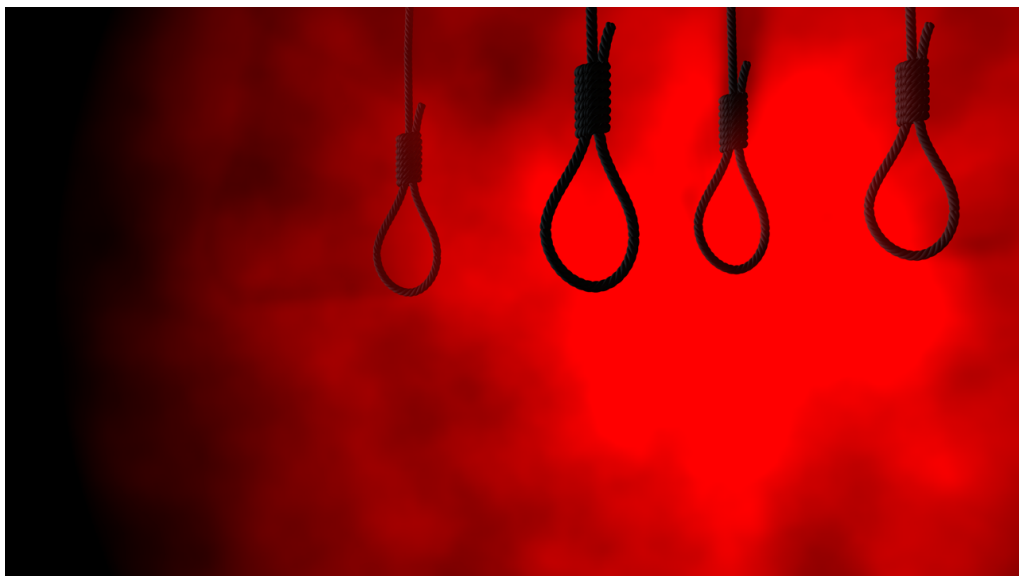


Fig. 5.28 3D Rope Scene Result.

I created the composition with enough space for Ewan and the Fire. At the end, when the scene finishes, a guillotine slides down the screen making the transition to the next Scene. I created this Guillotine with Adobe Photoshop:

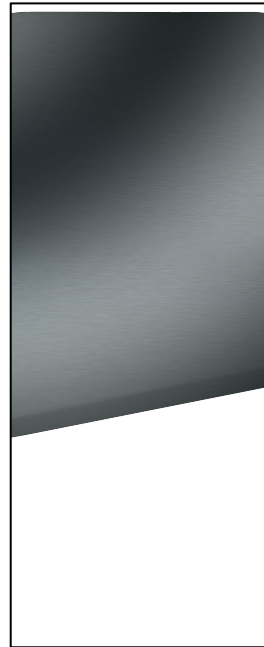


Fig. 5.29 Transition Guillotine.

This Guillotine is almost invisible to the eyes when you see the Layout, but in the final version of the short the metal sound makes it noticeable.

Motion blur is enabled when Prince Ewan enters into the screen, then a little wiggle effect is applied to Ewan in order to give movement and nervousness to the character.

5.1.7. Scene 07: Expulsion Scene

Nothing special about this scene in animation terms, it is done by the general process I have described on chapter 5.1.

The camera shot when Prince Ewan is far from the Castle is different from the one of the “King Leaves” scene, it’s a bit more closed and it centers into the path.

5.1.8. Scene 08: Enter Cave

Nothing special about this scene in animation terms, it is done by the general process I have described on chapter 5.1. The action and the shots are almost the same as in the original Animatic.

In this scene, some of the shadows are painted, but some other ones are real 3D shadows created by different Human 3D figure objects.

As you can see the Castle is at the back, nearly the entire Kingdom is modelled in 3D and located into the real 3D space. It was really huge and large 3D file.

The lighting of the Cave changes from the past to the future, in the past Cave the light is cold and more natural, and in the future cave I make it warm and kind of artificial. The Knight now leaves there, so I wanted to represent that he has turned a natural cave, into his home, with artificial lights and furniture.

The transition fade between the past and the future is quite slow to make the viewer understand the time ellipse.

5.1.9. Scene 09: Knight On Horse

In this scene the animation is not based in fades. I have drawn the Knight and the Horse into different layers in order to create the movement in After Effects. These are the different layers:

1. Horse body.
2. Horse tail
3. Horse front leg.
4. Horse Back leg.
5. Horse head + Knight Arm.
6. Knight Body.
7. Knight leg.

Each layer moves in a different way, recreating the run of a horse, and the Knight movement riding the horse.

For the background, I created a camera and rendered a part of the path that goes to the castle with Cinema 4D.

5.1.10. Scene 10: Keira and Kaylee House

In this scene I did only the basic forms of the 3D scenario for the Layout. This is almost the same as it was on the Animatic, but with the new 3D aspect. The windmill movement is done in 3D with Cinema 4D.

5.1.11. Scene 11: Training

I added some shots to this scene in order to strengthen the action. First I make a close shot of Kaylee Eyes, showing the glowing in them. With this close shot I focus the attention in the fact that they are people with purple eyes, like in the book legend.

Then I added a close shot of the Purple Stone, this is another element from the book, so the viewer can make the relation easily with the content seen at the beginning of the short.

From there the action is almost the same as the original Animatic. In this scene I did only the basic forms of the 3D scenario for the Layout. As a great part of this scenario is going to be in 2D, its 3D basic form is a lot simpler than the other scenario of the short.

5.1.12. Scene 12: Spying

This is almost the same scene of the Animatic with exact shots but with a bit of movement, also the scenario elements of this scene are really provisional in the Layout.

5.1.13. Scene 13: Mineral Mines

The 3D scenarios on this scene are almost the definitive version except from some details. The direction in which the Knight is going is different from the Animatic, that is because with the creation of the Kingdom Atlas some of the locations has changed.

Fades, and After Effects movements animate the first part of the scene. But in the second part there is a 3D zoom. In this second part the procedure had been the same as the one on “Evil Prince” Scene. The Black Knight is separated into some layers in order to make him adapt to the 3D perspective of the zoom.

These are the layers of the Black Knight in the second part of the zoom:

1. Right Leg.
2. Left Leg.
3. Body + Right arm.
4. Left Arm.

The shadows in this zoom are real 3D shadows. The shadow of the Knight is done by situating a Human 3D figure object, and the shadow of the Horse is done situating a free 3D Horse model into the scene and making it invisible with a Cinema 4D tag. With this tags they throw shadows but they are not visible to the camera.

5.1.14. Scene 14: Kdinap Scene

In this scene there are few changes. In the shot where Kaylee is staring at flowers, she is facing right instead facing left. That is because I was crossing the line in the original Animatic, as it was facing one direction, and then in next shot she was back to camera in opposite direction. This is solved in this Layout. Also the shot is not so close, I drawn a full body Kaylee in this new version.

The modeling and movement of the flowers is done in Cinema 4D and it's quite definitive. I have done the modeling of the petals, and I put them inside a circular cloner. The cloner duplicates the petal in putting them in a circle. Then I attached the flowers to some splines and I applied dynamics. I created a wind object in order to generate movement in the flowers. The texture is not definitive.

As the other scenes in the forest, I did only the basic forms of the 3D scenario for the Layout.

5.1.15. Scene 15: Keira Realizes

In this scene I did the animation for Keira face shouting, the animation is done by micro-fades between the different drawings.

These are the different drawings:

- Eyelids half open.
- Eyelids closed.
- Mouth open.
- Mouth half open.
- Mouth closed.
- Chin Up
- Chin Down
- Eyebrows

Then comes the zoom scene, in this scene, I situated and moved inside Cinema 4D the drawing of the Black Knight riding the Horse with Kaylee. There is a real 3D camera which first is following Kaylee's face, and then zooms out.

The entire Kingdom is done in real 3D with Cinema 4D. In Figure 5.29 you can see how big the scene is.

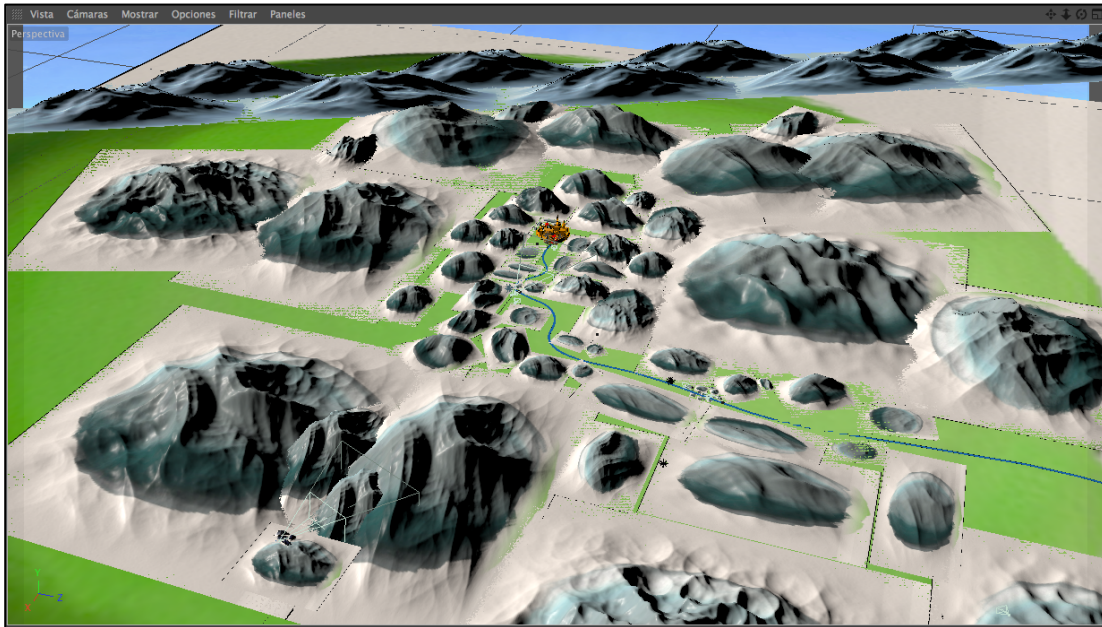


Fig. 5.30 Entire Kingdom 3D scene.

The stone with Keira that appears at the end of the zoom is put an animated with After Effects following the movement of the zoom. The 3D modeling of this part is almost definitive, the rocks, the kingdom, etc.

5.1.16. Scene 16: Chase Scene

This scene represents the time lapse of Keira going to the Castle. I situated some key frames of Keira running in the 3D scene with planes, and I have animated the 3D camera advancing parallel to them.

At the same time, I have animated the physical sky of Cinema 4D, from 18:00 to 21:00, for creating the time-lapse effect.

As the night was really dark, I created some soft blue area lights, and I distributed them through the entire Kingdom, generating a night which is dark but visible.

I animated this blue area light, so when the night comes down, the area light increases its brightness.

In the original Animatic Keira goes to the opposite direction, that is due to the re-situation of the different spaces when doing the Atlas of the Kingdom.

This scene finishes with a camera whip transition; at the end the camera goes rapidly to the left as it fades with the next scene.

5.1.17. Scene 17: Trapdoor Scene

This scene starts with a camera whip transition moving the camera from the right to the actual first shot of the scene.

In this scene the action is different to the original Animatic, instead of having to infiltrate, Keria enters the trapdoor directly after the Black Knight.

The 3D modeling for the natural part is definitive; the castle needs a bit more of detail in the shots behind the castle. The trapdoor also is not definitive in this layout.

Almost all the shots are new, because this part was different on the Animatic, also there where only a big general shot behind the castle, now there are more shots, and they are close to the action.

Nothing special in animation terms, it is done by the general process I have described on chapter 5.1.

5.1.18. Scene 18: Tower Room

This scene is so long that I divided it in three parts through all the production process.

I did only the basic forms of the Tower Room Modeling for the Layout. The lighting is quite definitive.

The animation for the major part it is done by the general process I have described on chapter 5.1.

I removed the cage that captures Keira in the original Animatic because it was very difficult to do the shots with the Cage covering the visibility of the characters. When the stone falls, Keira is trying to control the transformation, so there is no need of any cage.

When Keira is transforming, I used tons of layers into the same file, arms, eyes, and mouths. The process is the same as I did animating the face on “Keira Realizes” scene, but with more layers.

I also put some extra glow between her eyes and her hands when transforming with After Effects. Keira has a very exaggerated wiggle effect that increases. The changes of depth of Field are simulated in After Effects.

This scene had lots of different shots, all the action is happening on real 3D space as the rest of the short. In Figure 5.30 you can see how much cameras are in this scene:

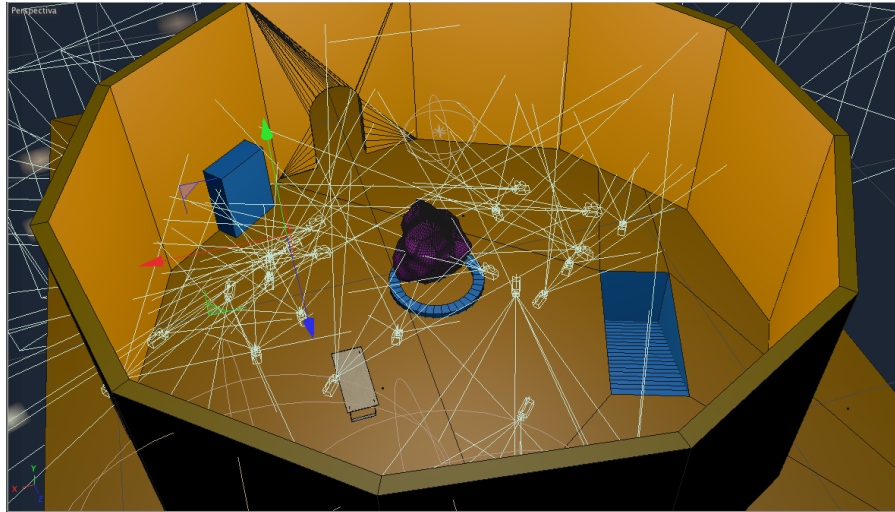


Fig. 5.31 Towe Room Cameras.

Also this scene contains lots of characters and actions, it is really complex compared to the one from the original Animatic. In this scene there is almost the half of the drawings of the entire short.

5.2. Production Ending

With the Advanced Layout finished I had every shot, animation and camera movement done, as well as all the drawings with flat colours. Some of the 3D modelings were quite definitive, but some other needed improvements.

You can found the Advanced Layout in the DVD under the file: `Advanced_Layout.mp4`.

Arrived to this point, it was the time to return to Glyndwr, so I had to prepare all the migration of my project into my laptop and portable Hard drives.

Transfer a great project such this when is in the final part of the development is really a huge mess. A big project it is enough hard to do when all is ok, so with messes like this all the things gets quite harder.

I made a list of what I had got to do in the last month in Wales:

- Finish the 3D part of some scenarios.
- Clean all the drawings and paint them with volume, integrating them into each scene.
- Do the audio of the short.

Once I arrived there, my teachers ask me about a planning for the month, so I distributed the work into the different weeks:

1. **First Week:** Finish all 3D scenarios.
2. **Second Week:** Paint the characters with volume and shade, and integrate them into each scene (now the color is flat).
3. **Third Week:** The same as above.
4. **Last Week:** Research and do the audio of the short.

I had not too much 3D rendering to do so I rendered during the progress, I did not need specific week for rendering.

At the beginning I thought that working in Wales was going to decrease the quality of the project, in Spain I had several computers, which are enough powerful to handle the project, also I had big screens to work properly. In Wales the computers are not enough powerful and almost all the time I had to work with my laptop, which wasn't powerful and has small screen and resolution. I was working too much comfortably and flawlessly in Spain. But although all the inconvenient, I tried to do my best about the project.

5.2.1. 3D Modeling

I had to finish all the 3D scenarios and polish them to achieve the final production look. I had little time so I worked at a fast pace.

I used lots of Art Shaders, textures painted in ArtRage, and displacement maps for the different 3D modelings. All the render settings are the standard ones. I used Ambient Occlusion only in the interior scenarios, because it looks better but it becomes more realistic and I wanted something more cartoonish. All the renders have the Global Illumination enabled in order to make them brighter and natural.

In Figure 5.31, you can see a brick texture I have painted in ArtRage, this texture is used through all the modelings, with different changes in color and details.

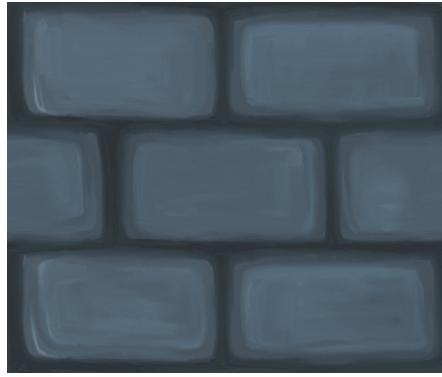


Fig. 5.32 Brick Texture.

For the corridor scene I created a edging texture for decoration, first I paint the texture on Artrage, and then I save a copy in black and white, this copy is loaded into the displacement channel on Cinema 4D in order to create deep 3D effect. The darker parts go down and the clearer parts go up.



Fig. 5.33 Decoration Texture.



Fig. 5.34 Decoration Texture in B/W for Displacement.

In Figure 5.34 you can see the parameters of the Displacement in Cinema 4D, and the preview of the material with de displacement applied.

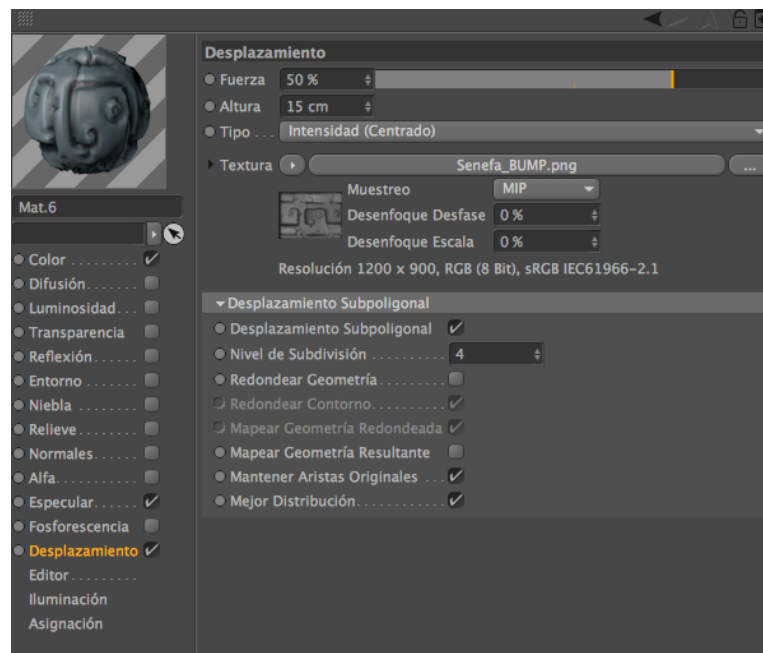


Fig. 5.35 Displacement channel on Cinema 4D.

The displacement technique is also used with the brick texture of Figure 5.31 in some scenes.

I have created a special texture for the natural path to the cave access, but at the end I have used it a lot in the different walls of the interior scenes as bump mapping, it gives texture to the walls and create imperfections. You can see this texture in Figure 5.35.



Fig. 5.36 Path texture in Black and White for the Bump channel.

The difference between the displacement and the bump is that the bump does not displace the mesh and the polygons of the 3D modeling. It is not real displacement, is a visual effect. It's not as exaggerated as displacement is. The behaviour is the same referring to black and white tones.

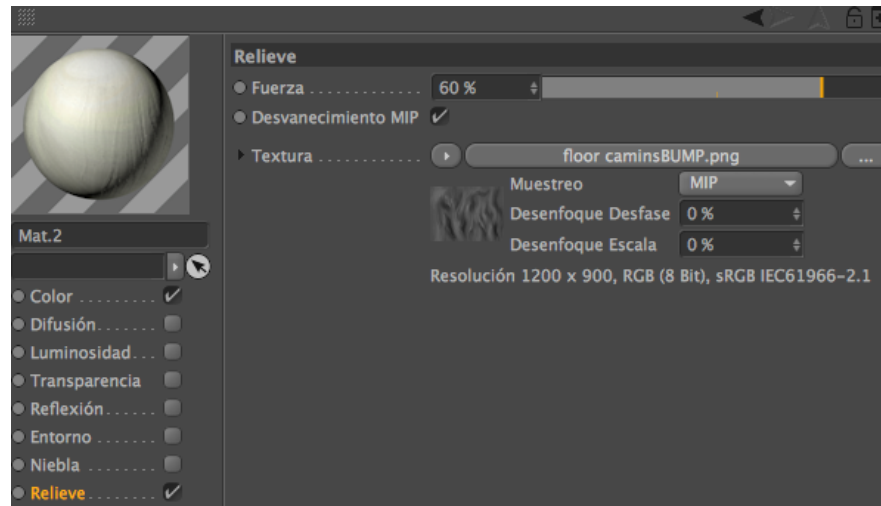


Fig. 5.37 Bump channel on Cinema 4D.

With this two techniques and a couple of new Art Shader materials, I have all the 3D modelings done and texturized. I have also painted a few more textures for some special parts as the floors of the Castle or the wood trapdoor.

The 3D modelings are quite simple; they are all based on basic forms and bevels, as they are all architectural modelings. The scenarios of the Forest part are almost completely in 2D, only the House and the floors are 3D.

5.2.2. Painting and Lighting

Once I had all the 3D scenarios done and ready to the final film, I started painting and cleaning the lines for all the drawings of the short.

That was and immense quantity of work, because I painted the drawings with an artistic and diffuse painting style, which it is not a cel shaded flat colouring.

I painted all the drawings using as a reference the light sources of the real 3D lights of the 3D scenarios, being affected by the real sources of light of the scenarios integrate a lot the characters into the scene.

I have done all this process with ArtRage Studio Pro. In Artrage the colors blend as real oil painting, as you can see in Figure 5.37.

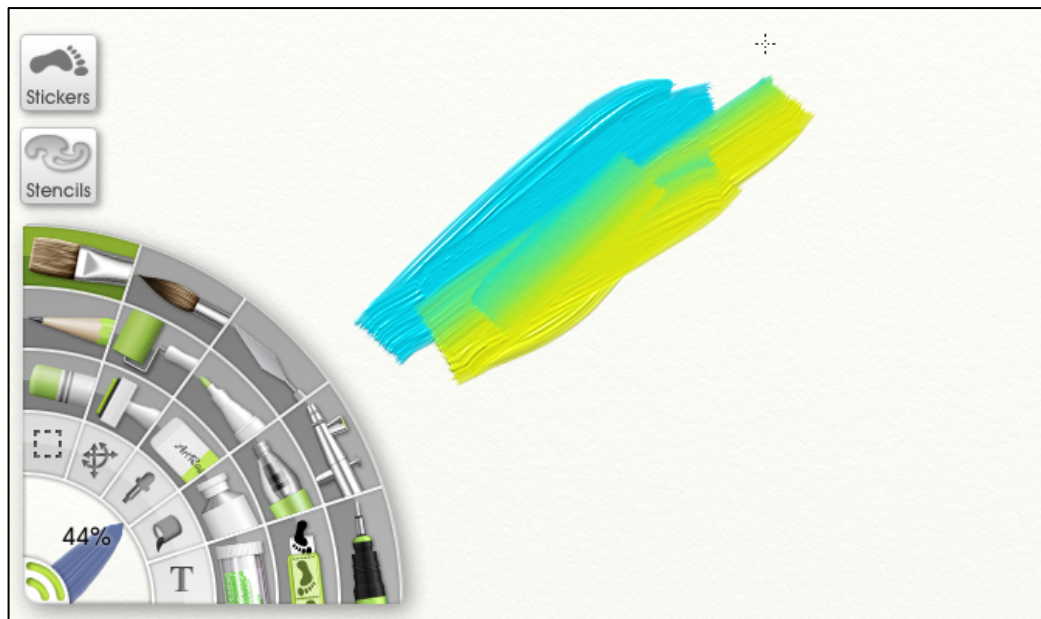


Fig. 5.38 ArtRage color blending.

I have use this technique for all the paintings, applying darker or lighter colors in order to create the lighting. I like to make the different brushstrokes of the color visible, it gives to the short the sketchy and artistic look I wanted.

For the outlining I used the Pencil tool, it is soft and sketchy, so is perfect for the look I was looking for. Also it is a bit transparent so it helps to the integration of the characters with the 3D scenarios.

In Figure 5.38 you can see how it looks the Pencil tool in ArtRage. I have done all the paintings and drawings with my Wacom Intuos 4 S graphic tablet.

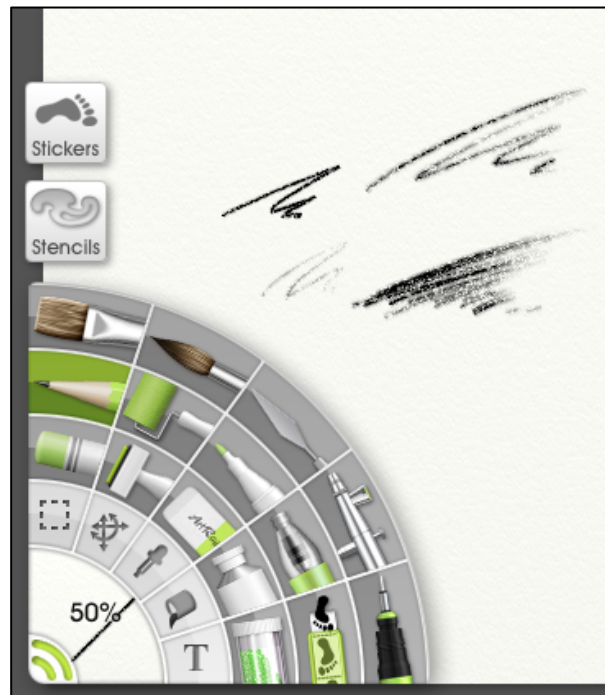


Fig. 5.39 ArtRage pencil tool.

In Figure 5.38, you can see a whole ArtRage Studio pro capture with one of the drawings of the short:

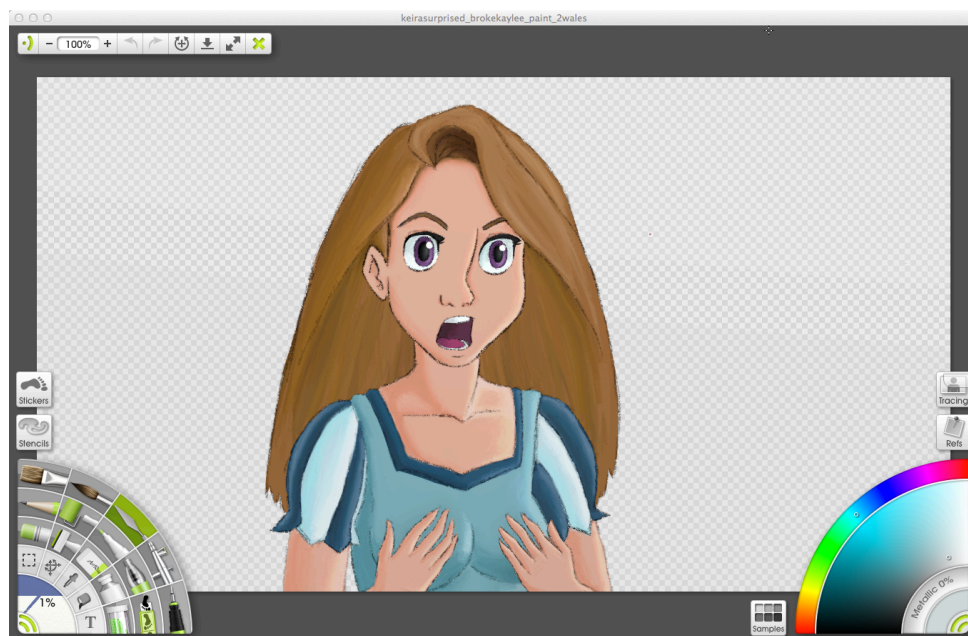


Fig. 5.40 ArtRage canvas.

This part of the process was not so complicated technically, but it was the most hard and heavy part of the project, because there are more than 130 drawings and poses in the entire short, and a very short time for painting them. So I really worked tons of hours per day in order to get this finished.

After painting and cleaning the lines of all the drawings, I had to re-organize all the layers inside the PSD files, in order to update the After Effects File with the animation. This took me about 2 days, because there were lots of drawings and lots of layers.

This last part of the project was very tough, due to all the tasks was very repetitive and long, it was like going through the same thing over and over.

5.2.3. Audio

As the other parts of the work took longer, I had much less time than expected for the audio part of the short.

I have searched all the sound effect files of these two websites:

- <http://www.freesound.org>
- <http://recursostic.educacion.es/bancoimagenes/web/>

And all the music of the short is from this website:

- <http://incompetech.com>

At the beginning I was not going to include voices into my short, but when editing the audio I realized that the short needed voices. So it was a last minute decision; the voices are recorded with GarageBand and the microphone of my Macbook Pro laptop.

I made all the audio editing with Premiere Pro CS5.5; fades, crossfades, cuts, stabilization of the audio levels for all the clips, etc.

After this, I exported the audio file separated from the video. With the isolated the audio file, I can import it in to the original animation file from After Effects in order to get a clean export of the video.

In the Figure 5.40 you can see a capture of all the audio editing of my short, you can see that there is a high amount of audio tracks and files I used for doing the audio of the short.

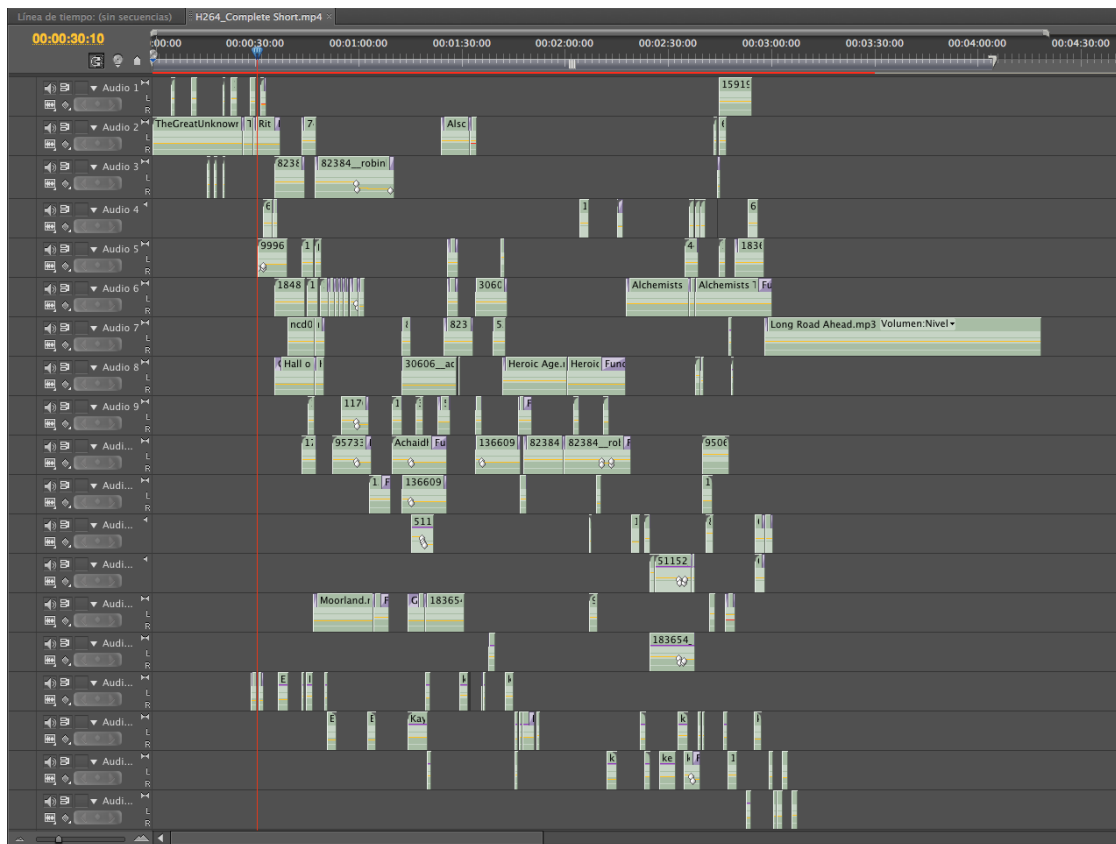


Fig. 5.41 Audio Premiere Pro screenshot.

5.2.3. Intellectual Property

I create all the contents of this Project from scratch. The only resources created by a project outsider, are the music and the sound effects.

All the sound effects are free copyright sounds.

All the Music is from the Incompetech Royalty-Free Music website, all the songs used in this project are licensed under Creative Commons: By Attribution 3.0. The credit is given in the credits of the animated short.



Fig. 5.42 Creative Commons Attribution 3.0 License

6. Post-Production.

The post-production was centred in some processes to improve the integration of the characters into the different scenes, as well as improve the atmosphere of the scenarios in general. I did all this processes with After Effects.

I have done some color corrections in order to integrate the different characters into the night scenes. In Figure 6.1 you can see one of this corrections, on the left side the original drawing, on the right side the corrected one.

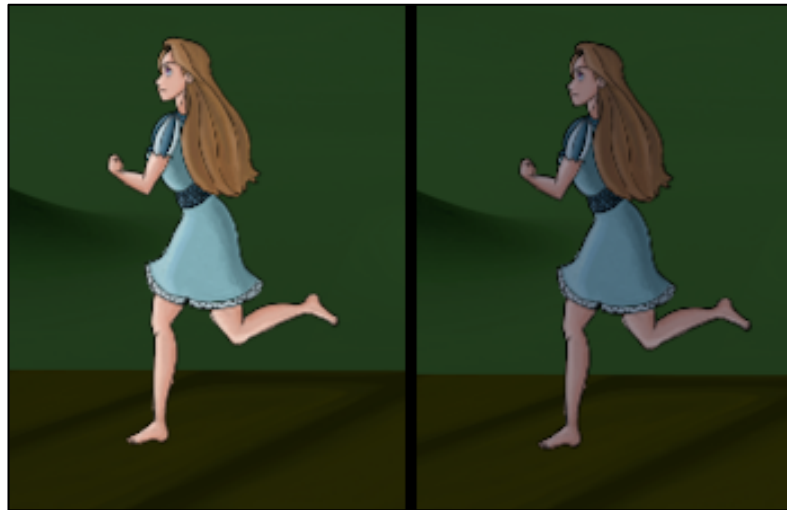


Fig. 6.1 Night Color Correction.

I also added lots of vignette effects and photo filters from different colors in order to boost the atmosphere of the different scenarios, and for improving the image quality.



Fig. 6.2 Before and after post-production.

7. Conclusions

Although the main objectives of the short have been fulfilled, and I am satisfied about the whole result and quality levels reached, at the end the overall sensation was not so pleasing.

From this project I learned that an Animated Short is not a work for one single person, an Animated short is a work of lots of people and teamwork. In an animated short there are people designing, people modeling, etc. Every person is responsible of doing a task, and within a considerable amount of time, they reach the final product.

I dedicated a whole year and tons of hours for doing this project, and everything seems small next to this large amount of time; animation is a laborious and very demanding process.

We are so used to the quality of big animation productions, productions that are made by very big teams of people and resources, so everyone nowadays is used to the actual animation standards.

People are not conscious of how difficult and big is the production of an animated production, even from people of other fields inside the audio-visual sector.

In an animation production you have to create everything that appears into the scene from scratch. There is so much work behind every single frame of the action.

I have accomplished the aims and objectives satisfactorily, but for me, the main point of this project is not focused on the final result, is more focused on the immense amount of things I learned during the production of the project. In this terms the project has been a really success.

8. References

- [1] ***Fear Effect***. Kronos Digital Entertainment. (Developer) (1999) ***Fear Effect [PlayStation, Videogame]***. England, Eidos Interactive.
- [2] ***Jet Set Radio***. Smilebit. (Developer) (2000) ***Jet Set Radio [Dreamcast, Videogame]***. Japan, Sega.
- [3] ***The Legend of Zelda: The Wind Waker***. Nintendo EAD. (Developer) (2002) ***The Legend of Zelda: The Wind Waker [Nintendo GameCube, Videogame]***. Japan, Nintendo.
- [4] ***Ōkami***. Clover Studio. (Developer) (2006) ***Ōkami [PlayStation 2, Videogame]***. Japan, Capcom.
- [5] ***Dragon Ball Z: Budokai Tenkaichi 3***. Spike. (Developer) (2007) ***Dragon Ball Z: Budokai Tenkaichi 3 [PlayStation 2 & Nintendo Wii, Videogame]***. Japan, Namco Bandai Games.
- [6] ***MadWorld***. Platinum Games. (Developer) (2009) ***MadWorld [Nintendo Wii, Videogame]***. Japan, Sega/Spike.
- [7] ***Sin City***. Frank Miller. (Creator) (1991) ***Sin City [Comic Book]***. USA, Dark Horse Comics.
- [8] ***Prince of Persia*** - Ubisoft Montreal. (Developer) (2008) ***Prince of Persia [Multiplatform, Videogame]***. France, Ubisoft.
- [9] ***Eternal Sonata***. Tri-Crescendo. (Developer) (2007-2008) ***Eternal Sonata [Xbox 360 & PlayStation 3, Videogame]***. Japan, Namco Bandai Games.
- [10] ***Borderlands 2***. Gearbox Software. (Developer) (2012) ***Borderlands [Multiplatform, Videogame]***. USA, 2K Games.
- [11] ***Naruto Shippuden: Ultimate Ninja Storm Generations***. CyberConnect2 (Developer) (2012) ***Naruto Shippuden: Ultimate Ninja Storm Generations [Xbox 360 & PlayStation 3, Videogame]***. Japan, Namco Bandai Games.
- [12] ***The Simpsons***. Matt Groening (Creator) (1989 – present) ***The Simpsons [TV, Animated Sitcom]***. USA, 20th Century Fox Television.
- [13] ***Futurama***. Matt Groening (Creator) (1999 – 2003) ***Futurama [TV, Animated Sitcom]***. USA, 20th Century Fox Television.
- [14] ***Family Guy***. Seth MacFarlane (Creator) (1999 – 2002) ***Family Guy [TV, Animated Sitcom]***. USA, 20th Century Fox Television.

- [15] *Tarzan*. Chris Buck & Kevin Lima (Directors) (1999) *Tarzan* [Cinema, Movie]. USA, Walt Disney Pictures.
- [16] *The Iron Giant*. Brad Bird (Director) (1999) *The Iron Giant* [Cinema, Movie]. USA, Warner Bros.
- [17] **Scott Johnston Talks Iron Giant 10th Anniversary**. Bill Desowitz. (2009) **Animation World Network** <http://www.awn.com/articles/2d/scott-johnston-talks-iron-giant-10th-anniversary/>. Internet source produced by Journalist Bill Desowitz. [Electronically accessed 07^h November 2012.]
- [17] *Appleseed*. Shinji Aramaki (Director) (2004) *Appleseed* [Cinema, Movie]. Japan, Toho.
- [18] *Appleseed Ex Machina*. Shinji Aramaki (Director) (2007) *Appleseed Ex Machina* [Cinema, Movie]. Japan, Toei Company.
- [19] *A Scanner Darkly*. Richard Linklater (Director) (2006) *A Scanner Darkly* [Cinema, Movie]. USA, Warner Independent Movies.
- [20] *Howl's Moving Castle*. Hayao Miyazaki (Director) (2004) *Howl's Moving Castle* [Cinema, Movie]. Japan, Studio Ghibli.
- [21] *The Princess and the Frog*. Ron Clements & John Musker (Directors) (2009) *The Princess and the Frog* [Cinema, Movie]. USA, Walt Disney Pictures.
- [22] *Paperman*. Jhon Kahrs (Director) (2012) *Paperman* [Cinema, Animated Short]. USA, Walt Disney Animation Studios.
- [23] **Unreal Engine Edge-Detection Images and Information**. Epic Games, Inc. (2011-2012) **Unreal Developer Network** <http://udn.epicgames.com/Three/DevelopmentKitGemsSobelEdgeDetection.html/> Internet source produced by Epic Games, Inc. [Electronically accessed 26^h November 2012.]
- [24] **Tutorial Cinema 4D Introduction Sketch and Toon**. Sami Halawa. (2011) **Visual Key** <http://www.youtube.com/watch?v=FbCipLPdBd4/> Internet source produced by Sami Halawa. [Electronically accessed 03^h November 2012.]
- [25] *Tangled*. Nathan Greno & Byron Howard (Directors) (2010) *Tangled* [Cinema, Movie]. USA, Walt Disney Pictures.
- [26] *Pocahontas* Mike Gabriel Eric Goldberg (Directors) (1995) *Pocahontas* [Cinema, Movie]. USA, Walt Disney Pictures.
- [27] *The Little Mermaid*. Ron Clements & John Musker (Directors) (1989) *The Little Mermaid* [Cinema, Movie]. USA, Walt Disney Pictures.

[28] *The Legend of Zelda: Ocarina of Time*. Nintendo. (Developer) (1998) *The Legend of Zelda: Ocarina of Time* [Nintendo 64, Videogame]. Japan, Nintendo.

[29] *Metal Gear: Peace Walker*. Kojima Productions. (Developer) (2009) *Metal Gear: Peace Walker* [Sony Playstation, Videogame]. Japan, Konami.

[30] *Princess Mononoke*. Hayao Miyazaki (Director) (1997) *Princess Mononoke* [Cinema, Movie]. Japan, Studio Ghibli.

8.1. Bibliogrphahy

Studio Ghibli. (2005) *The art of Howl's Moving Castle* (3rd edn.), San Francisco, VIZ Media.

Disney Enterprises, Inc. (2010) *The art of Tangled by Jeff Kurtti* (1st edn.), San Francisco, Chronicle Books.

Richard Williams and Imogen Sutton. (2010) *The Animator's Survival Kit – Expanded Edition* (1st edn.), New York, Faber and Faber, Inc.

Ballistic Media. (2002-2013) **CG Society** <http://www.cgsociety.org> Internet source managed by Ballistic Media and maintained by a group of 15 staff working from around the world.

Wikimedia Foundation, Inc. (2001-2013) **Wikipedia** <http://www.wikipedia.org> Internet source produced by Wikimedia Foundation, Inc

Creative Crash ©. (2013) **Creative Crash** <http://www.creativecrash.com> Internet source produced by administrator Will McCullough.

TV Tropes Foundation, LLC. (2013) **Tv Tropes** <http://tvtropes.org/> Internet source produced by TV Tropes Foundation, LLC.

Wikia Video Games. (2013) **Wikia** <http://gaming.wikia.com/> Internet source produced by Wikia Staff.

Maxon. (2013) *Cinema 4D Studio Manual* (Digital edn.), Maxon.

C4D Cafe. (2013) **C4D Cafe** <http://www.c4dcafe.com/> Internet source produced by C4D Cafe Staff.

Sami Halawa. (2013) **Visual Key** <http://www.visualkey.net/> Internet source produced by Sami Halawa.

Volker Römer. (2005-2013) **Codeworkers** <http://www.codeworkers.de/> Internet source produced by Volker Römer.

Envato. (2013) **Ae Tuts +** <http://ae.tutsplus.com/> Internet source produced by Envato.

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THE LEGEND OF THE PURPLE EYES

Economical Study

**RAÚL REYES LUQUE
PONENT: DAVID MINGUILLÓN PLANELL**

SUMMER 2013



**TecnoCampus
Mataró-Maresme**

Index

1. Project Cost	1
1.1. Materials cost	1
1.2. Human resources cost	2
1.3. Amortization costs	3
1.4. Indirect costs	4
1.5. Total Project cost	4
2. Market price	5
2.1. Unit total cost	5
2.2. Unit selling price	5

1. Project Cost

This document shows the economic costs related to the project. The budget/economic study realized considers:

- Materials cost/Initial Investment.
- Human resources cost.
- Facilities cost (electricity, telephone, water)/Indirect costs.
- Amortization costs of the tools that must be renewed.

1.1. Materials cost

This is the initial investment in order to accomplish the project. It consists basically in the purchase of essential material needed for the realization of the project. It includes one section dedicated to the Hardware and one section dedicated to the Software.

Description	Quantity	Unit Price (€)	Total (€)
<i>Hardware</i>			
iMac Computer	1	1.379,00	1.379,00
Intuos 4 S Graphic Tablet	1	229,00	229,00
MacBook Pro Computer	1	1.229,00	1.229,00
Secondary Monitor	1	199,00	199,00
1 TB Hard Drive	1	59,99	59,99
Mini display Port Adaptor	2	19,99	39,98

<i>Software</i>			
Adobe Photoshop	1	942,18	942,18
Adobe Premiere Pro	1	1.060,26	1.060,26
Adobe After Effects	1	1.355,46	1355.46
ArtRage Studio Pro	1	39,99	39,99
Cinema 4D	1	2.768,00	2.768,00
Microsoft Office	1	119,00	119,00
TOTAL MATERIAL COST			6916.40

1.2. Human resources cost

As a single person made the Project, it has been considered a cost of 20,00 euros per hour.

Concept	Hours	Cost/hour (€)	Total (€)
Hours dedicated to the project	1100h	20,00	22.000
TOTAL RECURSOS HUMANS	22.000		

1.3. Amortization costs

The Amortization has been calculated based on the legal maximum computation of annual work hours, which is 1.880 hours per year.

This legal computation is based on the weeks contained in a year: 52 weeks, minus vacation weeks and 2 weeks of holidays, is equal to 45,7 weeks. These 45,7 weeks equates to the number of working days in a year, five days a week.

And based on the number of working days in the year: 225 working days multiplied by 8 hours per day, is equal to this 1.880 hours per year.

Description	Life Years	Cost	Hours of use	Cost/hour	Amort.
<i>Hardware</i>					
iMac Computer	4	1.379,00	900	0,19	172,36
Intuos 4 S Graphic Tablet	3	229,00	800	0,042	33,93
MacBook Pro Computer	4	1.229,00	200	0,17	34,14
Secondary Monitor	6	199,00	800	0.018	14,74
1 TB Hard Drive	5	59.99	90	0,006	0,60
Mini display Port Adaptor	4	39.98	950	0,005	5,28
<i>Software</i>					
Adobe Photoshop	2	942,18	10	0.26	2,62

Adobe Premiere Pro	2	1.060,26	90	0,29	26,51
Adobe After Effects	2	1.355,46	300	0,38	112,96
ArtRage Studio Pro	2	39,99	400	0.011	4,44
Cinema 4D	2	2.768,00	300	0.77	230,66
Microsoft Office	8	119,00	200	0,0008	0,17
TOTAL AMORTITZATIONS					638,41

1.4. Indirect costs

Indirect costs consider the different expenses for the use of the facilities where the project has been developed; it includes the consumption of electric energy, water, etc.

As in my project this is only affecting the electricity energy used, the percentage of the indirect costs in this project is less than 1%.

1.5. Total Project cost

Material costs	6916.40 €
Human resources cost	22.000 €
Amortization costs	638,41 €
Subtotal	29.554,81 €
Indirect costs (0.7%)	206.88
TOTAL	29.761,69

2. Market price

As an animated short digitally produced, the distribution is online and free for everyone who wants to see the product. There is no cost to duplicate the product because is digitally created so only “copy & paste” is needed to duplicate digital information.

Its length is around the 4 minutes so there is no problem to make the online distribution. But if the product were produced to sell physical copies, the production cost would be as follows.

2.1. Unit total cost

Total cost for the prototype:

- Blu Ray Disc: 1€
- Box: 1€
- Cover: 0,50 €

Prototype material cost	2,50 €
Material discount 25%	-0,63 €
Unit material cost	1,87 €
Unit fabrication cost	10 €
UNIT TOTAL COST	11,87 €

2.2. Unit selling price

Total cost for 10.000 units	118.700 €
Development cost	29.761,69 €
TOTAL COST	148.461,69 €
Unit selling price (TOTAL COST/10.000 units)	14,86 €
Trade margin 40%	5,94 €
UNIT SELLING PRICE	20.8 €

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Annexes

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Index.

Annex I. Work breakdown structure..... 1

Annex II. Cel Shading Tests and Classification.....5

Annex III. Trailer Material..... 11

Annex IV. Storyboard and Animatic 13

Annex V. Rejected Character Designs.....55

Annex VI. Keira 3D Modeling.....67

Annex VII. DVD Contents.....73

Annex I. Work breakdown structure.

Pre-Production work breakdown structure:

ACTIVITY	EQUIPMENT	MATERIALS	FACILITIES	PEOPLE	COST	PERIOD
Think on the story/Brainstorming	Computer	Notebook, pencils/pens	Glyndwr University	Me	-	3 or 4 days
Work on the characters and their interactions	Computer	Notebook, pencils/pens	Glyndwr University	Me	-	3 or 4 days
Write a complete story line	Computer	Notebook, pencils/pens	Glyndwr University	Me	-	1 week
Create the Storyboard (first version)	Computer/ Graphics Tablet	Notebook, pencils/pens	Glyndwr University	Me	-	1 week
Create the animatic (first version)	Computer/ Graphics Tablet	Notebook, pencils/pens	Glyndwr University	Me	-	1 week
Design the characters	Computer/ Graphics Tablet	Paper sheets for design, pencils/pens	Raul's House	Me	-	1 week
Design the main scenarios	Computer/ Graphics Tablet	Paper sheets for design, pencils/pens	Raul's House	Me	-	1 week
Research: Investigation of 2D-3D techniques	Computer/Design books	-	Raul's House / Tecnocampus University	Me	-	2 weeks
Research: Study a suitable graphic style	Computer/ Graphics Tablet	-	Raul's House / Tecnocampus University	Me	-	1 weeks
Testing: Test the different techniques and researches	Computer/ Graphics Tablet	-	Raul's House / Tecnocampus University	Me	-	1 week
Create the new and improved Storyboard (definitive)	Computer/ Graphics Tablet	-	Raul's House	Me	-	2 weeks

version)						
Create the new and improved Animatic (definitive version)	Computer/ Graphics Tablet	-	Raul's House	Me	-	1 week

Production work breakdown structure:

ACTIVITY	EQUIPMENT	MATERIALS	FACILITIES	PEOPLE	COST	PERIOD
Characters modeling	Computer/ Graphics Tablet	Previous character designs	Raul's House	Me	-	1 month
Characters Texturing	Computer/ Graphics Tablet/ Reflex camera	-	Raul's House	Me	-	2 weeks
Characters Rigging	Computer/ Graphics Tablet	-	Raul's House /Tecnocampus Univesity			2 weeks
Scenarios & objects modeling	Computer/ Graphics Tablet	-	Raul's House	Me	-	1 month
Scenarios & objects texturing	Computer/ Graphics Tablet/ Reflex camera	-	Raul's House/ TBA location	Me	-	3 weeks
Music composing & search	Computer/ MIDI Interface	-	Raul's House	Me	-	2 weeks
Voice recording.	Computer/ Microphone	-	Raul's House / Tecnocampus University	Me / Voice Actors	-	3 or 4 days
Audio SFX production & search	Computer/ MIDI Interface/ Audio Recorder	-	Raul's House /TBA Location/A place to produce audio effects and record them	Me	-	3 or 4 days
3D montage of each scene	Computer/ Graphics Tablet	-	Raul's House	Me	-	2 weeks
Pre-render each	Computer	-	Raul's House	Me	-	1 week

scene elements						
Animation of pre-rendered elements in 2D	Computer	-	Raul's House	Me	-	1 month
Polish & supervise all the production material	Computer	All previous work done	Raul's House	Me	-	1 week

Post-Production work breakdown structure:

ACTIVITY	EQUIPMENT	MATERIALS	FACILITIES	PEOPLE	COST	PERIOD
Video & Audio montage	Computer	-	Glyndwr University	Me	-	2 weeks
Post-production processes and FX video effects	Computer	-	Glyndwr University	Me	-	1 and a half week
Encoding and exporting	Computer	-	Glyndwr University	Me	-	3 or 4 days.

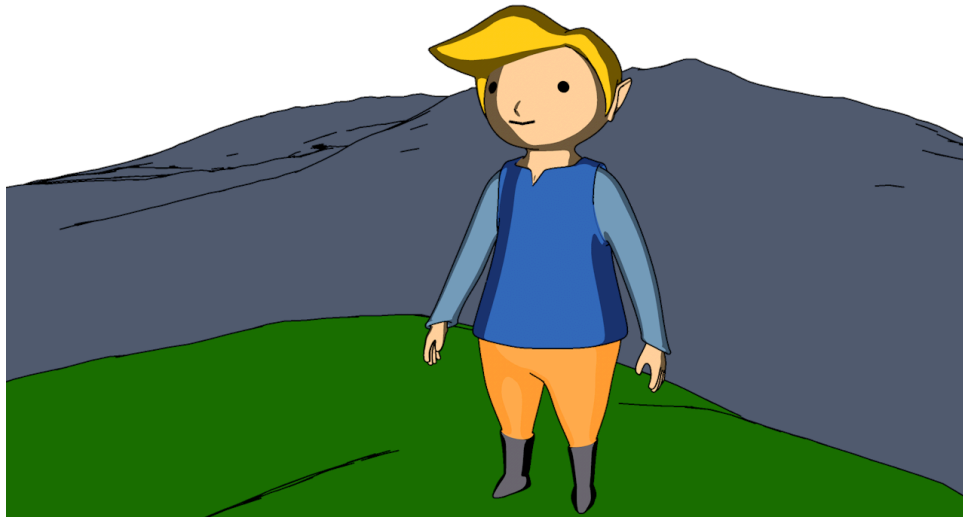
Annex II. Cel Shading Tests and Classification

Realistic shading:

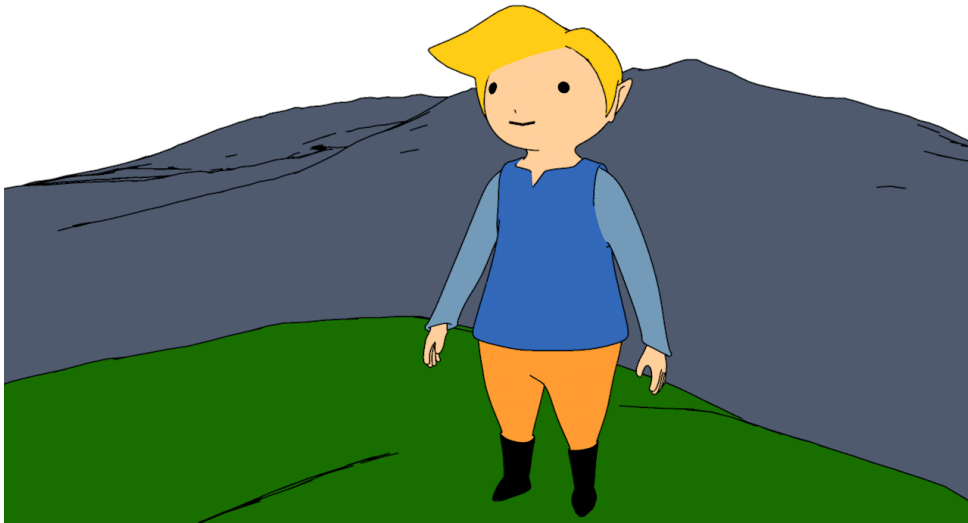


This is a realistic render of the model and the scenario, with ambient occlusion, global illumination, recreating real lighting condition. The visual result is excellent but is too conventional.

Flat two tones with outline:



Here I have applied a Cel Shading illumination, which consists in one color for the major base, and a second color for darkest shadow zones. Also I applied a black thin outline adapting to shapes and borders. This combination results in a figure quite understandable, with a 2D cartoonish look.

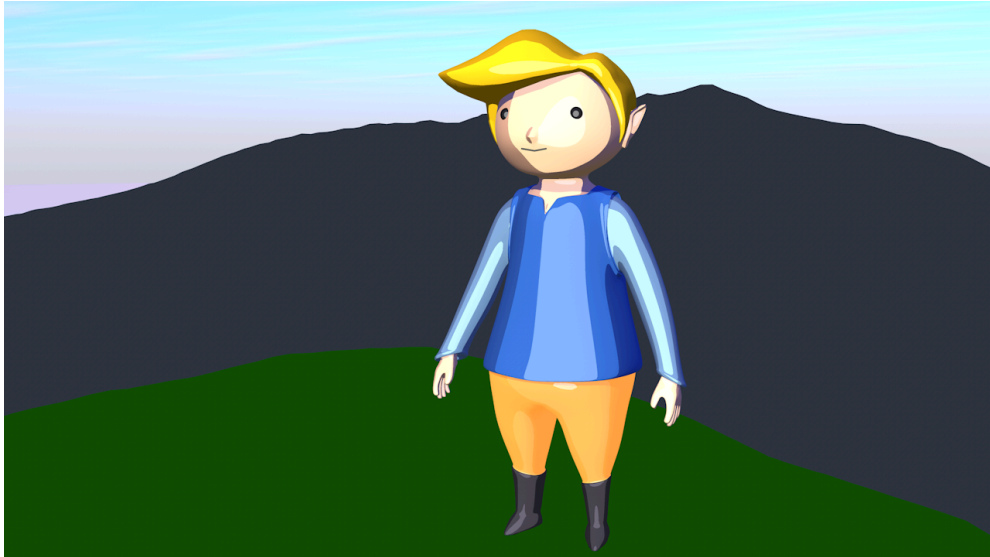
Flat one tone with outline:

Here I applied a one color flat based Cel Shading. In this combination, the force of shapes and borders is only defined by the black outline. This is the most 2D combination but it losses detail in model shapes and perspective.

Pictorial style with artistic brush outline:

This is the most artistic combination. Is based on textures painted as ball materials in an external painting program, and applied in 3D detecting shadows and highlights. I applied an outline that mimics traditional ink lines, enhancing the painting style of the render.

It is a very good looking style, but it's not the most precise, sometimes misinterprets original forms representing the models with low accuracy. But it's perfect for representing irregular and traditional painting style.

Flat multi tone:

This combination provides a very good looking and sharp result. With the use of several tones, model shape is totally understandable, and no needs an outline for defining shapes. This combination is the one that looks more 3D due to the multiple amount of tones.

Black & White Comic style:

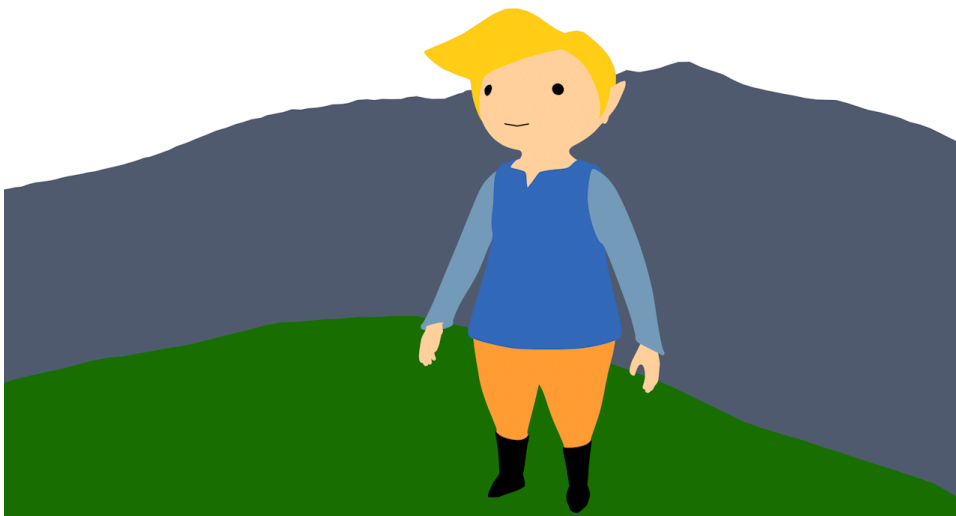
Here I have used thick outlines and few colors, it's based in shapes rather than defined figures, and it works better with more complex models. I use grey scales, black and white. I applied a dotted texture on the mountains, which defines better the topography. It can look completely 2D.

Real Shading + Black outlines:



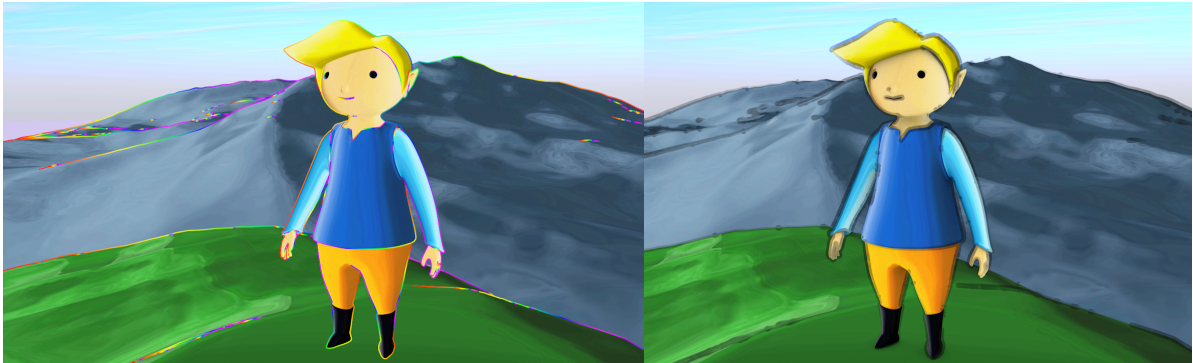
This combination is commonly used and it can be combined also with cartoon textures to achieve a cartoon looks with the volume advantages of realistic lighting. It defines shapes perfectly and gives to the production a cartoonish style. It is treated like a post effect, which can be applied to any normal 3D production without losing properties.

Flat tone:



This is the most minimalistic combination and consists in simple color shapes. Is a one flat color Cel Shading without outline or shadows. It needs very distinctive colors and separate shapes for being understandable.

Different Outlines:



The possibilities with the outlines are almost endless; there are very many options and settings you can control to create your own perfect outline depending on the style you want to achieve. Also you can animate the outlines creating a live sketching style.

Other Tests:

I have also made other tests with some old elements I have modeled some years ago, to see how Cel Shading interacts with elements not modeled with the aim of apply Cel Shading.

This is a realistic shading render of the model I have made, as you can see is a very detailed and complex model.



And here is the model with Cel Shading applied, as you can see Cel Shading is not working really well due to the high level of details. It creates a lot of unwished artifacts through all the mesh with quite noisy shadows; it's not a clean result.



Annex III. Trailer Material

NOTE: Most of the material of the Trailer is finally included under the DVD due to its length, here I will list and describe all the Trailer Material anyway. The actual content of the DVD is indexed in “Annex VII”

1. First I did some Drafts of the actual Trailer, I’ve done them by hand.
 - a. You can found this under the file: Trailer_Sketch.pdf
2. Then I re-drawn all the sketches with ArtRage Studio Pro in order to make the Storyboard digital, I’ve assembled all in Toon Boom and I’ve added descriptions for every shot and action.
 - a. You can found this Story Board under the file: Trailer_Storyboard01.pdf.
3. Then I’ve done the Animatic and adjusted some of the timings of the previous version.
 - a. You can found this second version of the Trailer Story Board under the file: Trailer_Storyboard02.pdf.
 - b. You can found this first version of the animatic in the DVD as Trailer_Animatic01.mp4 or in the following link:
<http://www.youtube.com/watch?v=aAcQBdlQOKM>
4. I did the last version of the Animatic, changing some animations, and I have added and arranged the music (without fadings). The zoom scene had changed completely: I have re-drawn it and now the transition is smoother and has an epic feeling.
 - a. You can found this third version of the Trailer Story Board under the file: Trailer_Storyboard03.pdf.
 - b. You can found this second version of the animatic in the DVD as Trailer_Animatic02.mp4 or in the following link:
<http://www.youtube.com/watch?v=JJdAKphMWeg>

All the paintings of the finished trailer were done in ArtRage, all the Animation and exporting was done in After Effects, the resolution is 1280x720 and the aspect ratio is 16:9.

You can see the finished trailer under the file: Trailer_FinalVersion.mp4, or in the following link:

- <http://vimeo.com/45867662>

Annex IV. Storyboard and Animatic

Here I will include the complete Storyboard of the entire animated short, you can also found the digital PDF file of the storyboard in the DVD as: Complete_Storyboard.pdf.

You can found Animatic of the entire animated short in the DVD as Complete_Animatic.mp4 or in the following link:

- <http://www.youtube.com/watch?v=SQReizOvoQk>

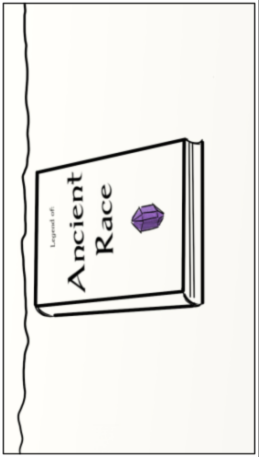


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Page 1/41

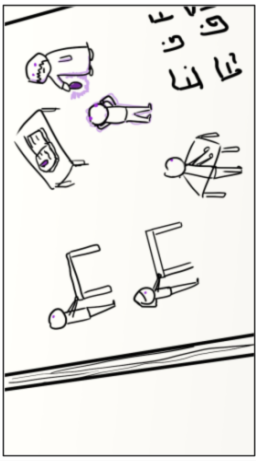
Scene	Duration	Panel	Duration	Panel	Duration
1	02:00	1	02:00	1	02:00
					
Action Notes We see the "Legend of Ancient Race" book cover.					
2	03:00	1	03:00	1	03:00
					
Action Notes The Story begins by explaining the legend of an ancient race who used to live in floating Islands. This is explained by an illustrated book in which pages are turning.					
3	03:00	1	03:00	1	03:00
					
Action Notes The Story explains that this ancient race has the ability to transform in mythological giant beasts with unleashed power, when they transform they lose control and become really savage.					

rec ROOM


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Page 2/41

Scene	4	Duration	03:00	Panel	1	Duration	03:00
							


Action Notes
When the people of that ancient race grow older, they learn how to control those powers, to avoid transforming into those savage beasts.

Scene	5	Duration	04:00	Panel	1	Duration	04:00
							

Action Notes
The stories say that long time ago, that civilization fell.

Scene	6	Duration	03:00	Panel	1	Duration	03:00
							


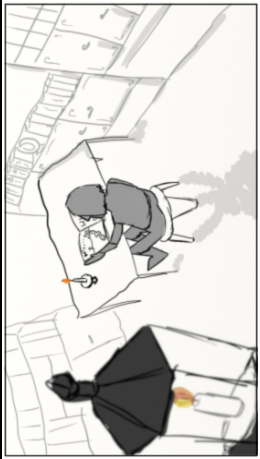
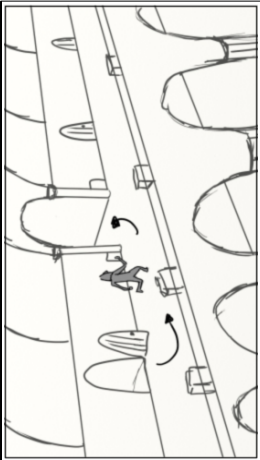
Action Notes
Only some survivors of the ancient race survived, but it is a legend.




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Raul Reyes - Negotiated Studies 1

Page 3/41

Scene	7	Duration	03:00	Panel	1	Duration	03:00
							
Action Notes Nobody knows if the legend is true or not, but that purple mineral does exist on earth.							
Scene	8	Duration	03:00	Panel	1	Duration	03:00
							
Action Notes We see the black knight as a young boy, looking at this book.							
Scene	9	Duration	03:00	Panel	1	Duration	03:00
							
Action Notes The young black knight goes to king room (his father)							
Notes He was the heir to the throne, but he was too naughty and disobedient.							

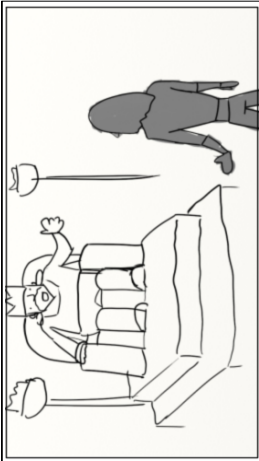


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Raul Reyes - Negotiated Studies 1

Page 4/41


Scene	Duration	Panel	Duration
10	02:15	1	02:15



Action Notes

One day the king left the Kingdom for important political travel and gave the command of the Kingdom to his son, the Black Knight.

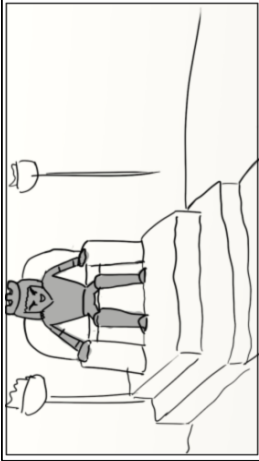
Scene	Duration	Panel	Duration
11	02:00	1	02:00



Action Notes


We see the king leaving the castle.

Scene	Duration	Panel	Duration
12	02:00	1	02:00



Action Notes




And the Black Knight taking control of the throne.




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Raul Reyes - Negotiated Studies 1

Page 5/41



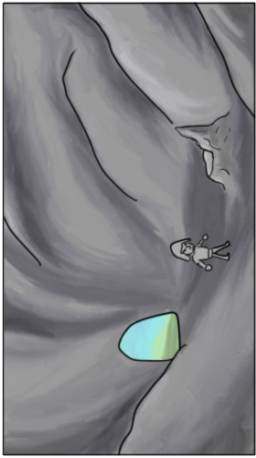
Scene	13	Duration	04:00	Panel	1	Duration	04:00
							
Action Notes During the king's absence the Black Knight committed many atrocities.							
Scene	14	Duration	02:00	Panel	1	Duration	02:00
							
Action Notes The King returning after his travel.							
Scene	15	Duration	03:00	Panel	1	Duration	03:00
							
Action Notes When the king returned, the ?Black Knight? was exiled by his father.							




Complete Storyboard - Final project

Raul Reyes - Negotiated Studies 1

Page 6/41


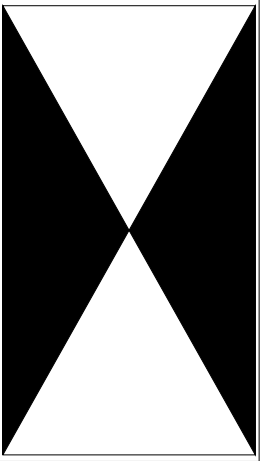
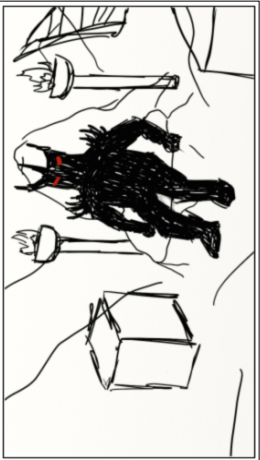
Scene	16	Duration	02:00	Panel	1	Duration	02:00
							
<div>Action Notes</div> <div>The Black Knights start walking aimlessly.</div>							
Scene	17	Duration	02:00	Panel	1	Duration	02:00
							
<div>Action Notes</div> <div>The Black Knight walks through the black mountains and finds a cave.</div>							
Scene	18	Duration	03:00	Panel	1	Duration	03:00
							
<div>Action Notes</div> <div>He decides to stay in that cave.</div>							




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Raul Reyes - Negotiated Studies 1

Page 7/41

Scene	19	Duration	03:00	Panel	1	Duration	03:00
				Dissolve		00:24	
							
Action Notes He seats on a rock.		Action Notes The time passes and now we are in present time, and we see how the black knight has evolved.					




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Raul Reyes - Negotiated Studies 1

Page 8/41

Scene	Duration	Panel	Duration	Panel	Duration
21	03:00	1	03:00		




Action Notes

The black knight is riding his horse through the forest.

Notes

He becomes a very bad person and a hermit, living alone in the mountains and going down to loot and steal things from the citizens, the people of the villages and the farmers.

Scene	Duration	Panel	Duration	Panel	Duration
22	02:00	1	02:00		



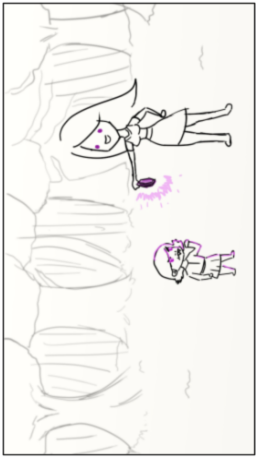
Action Notes

We see the main character's house in the forest.

Notes


After years and years, the only two survivors of the ancient race are the Main character Girl, and her little sister. They live alone in the forest, and no one knows that they are descendants. They live in peace and have normal lives, sometimes they go to the citadel to buy things, and commerce. They have purple eyes so when the eldest sister goes to the city she goes with a hood to hide her eyes, like a cloak.

Scene	Duration	Panel	Duration	Panel	Duration
23	04:00	1	04:00		



Action Notes




The eldest sister trains with her little sister to teach her how to control that powers in front of a small purple crystal.




Complete Storyboard - Final project

Raul Reyes - Negotiated Studies 1

Page 9/41

Scene	24	Duration	01:00	Panel	1	Duration	01:00
							
Action Notes The eldest sister trains with her little sister to teach her how to control that powers in front of a small purple crystal.							
Scene	25	Duration	02:00	Panel	1	Duration	02:00
							
Action Notes The Black Knight saw them, and pieces things together, he discovers that the legend he used to read as a young boy is in fact true, and the Girl and her little sister are two descendants of that ancient race.							
Scene	26	Duration	02:00	Panel	1	Duration	02:00
							
Action Notes He plans to kidnap the little sister and use her unleashed power to beat the King and become the master and lord of the Kingdom.							




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Raul Reyes - Negotiated Studies 1

Page 10/41

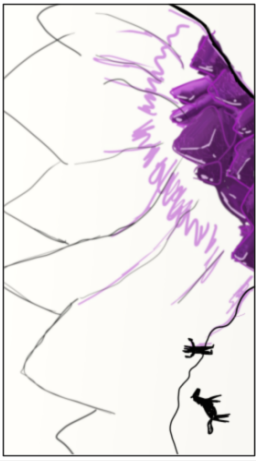
Scene	Duration	Panel	Duration	Panel	Duration
27	01:10	1	01:10		



Action Notes

He manages to get purple mineral.


Scene	Duration	Panel	Duration	Panel	Duration
28	02:10	1	02:10		



Action Notes


He goes into the dark mountains and finds an immense mine, with a great purple mineral rock... After that he goes to kidnap the little Girl.

Scene	Duration	Panel	Duration	Panel	Duration
29	01:10	1	01:10		



Action Notes




Main character's house.




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Raul Reyes - Negotiated Studies 1

Page 11/41




Scene	30	Duration	03:00	Panel	1	Duration	03:00
							
Action Notes Little sister is playing happily with some flowers.							
Scene	31	Duration	02:00	Panel	1	Duration	02:00
							
Action Notes Then the black knight kidnaps the little girl.							
Scene	32	Duration	01:00	Panel	1	Duration	01:00
							
Action Notes Then the black knight kidnaps the little girl.							




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Raul Reyes - Negotiated Studies 1


Page 12/41

Scene	33	Duration	02:00	Panel	1	Duration	02:00
							
<div>Action Notes</div> <div>Short time after, the eldest sister realizes that her little sister is not outside the house.</div>							
Scene	34	Duration	01:10	Panel	1	Duration	01:10
							
<div>Action Notes</div> <div>The eldest sister shouts her sister name.</div>							
Scene	35	Duration	01:00	Panel	1	Duration	01:00
							
<div>Action Notes</div> <div>Little Girl shouting, zoom out.</div>							

 Complete Storyboard – Final project Raul Reyes – Negotiated Studies 1

Page 13/41

Scene	36	Duration	01:00	Panel	1	Duration	01:00
							
Action Notes Zoom out.							
Scene	37	Duration	01:00	Panel	1	Duration	01:00
							
Action Notes Zoom out.							
Scene	38	Duration	01:00	Panel	1	Duration	01:00
							
Action Notes Zoom out.							




Complete Storyboard - Final project

Raul Reyes - Negotiated Studies 1

Page 14/41


Scene	39	Duration	03:00	Panel	1	Duration	03:00
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Action Notes

She goes to the mountain and see from the distance, the black knight dragging little sister, and quickly she starts running to save her sister.


Scene	40	Duration	01:00	Panel	1	Duration	01:00
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Action Notes


Eldest sister frowning.

Scene	41	Duration	01:00	Panel	1	Duration	01:00
-------	----	----------	-------	-------	---	----------	-------



Action Notes




Eldest sister begins to run.



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Raul Reyes - Negotiated Studies 1

Page 15/41

Scene	42	Duration	02:00	Panel	1	Duration	02:00
							
Action Notes It got dark after lots of running,							
Scene	43	Duration	02:00	Panel	1	Duration	02:00
							
Action Notes It got dark after lots of running,							
Scene	44	Duration	02:00	Panel	1	Duration	02:00
							
Action Notes Black Knight riding to king's castle, with the little sister.							



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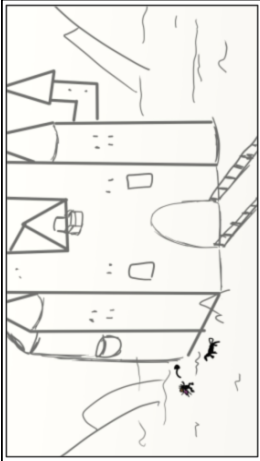
Page 16/41

Scene	Duration	Panel	Duration	Panel	Duration
45	02:00	1	02:00	1	01:00
46	02:00	1	02:00	1	01:00
47	01:00	1	01:00	1	01:00



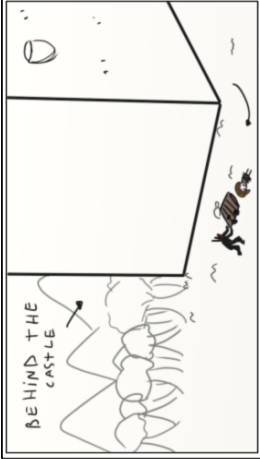
Action Notes

She realizes that the black knight is going to king's castle, and follow him.




Action Notes

Due to the fact that Black Knight used to live in the castle when he was young, he knows a secret entrance behind the castle.



Action Notes

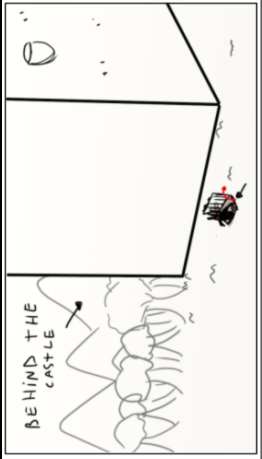
The Black Knight open the secret entrance.

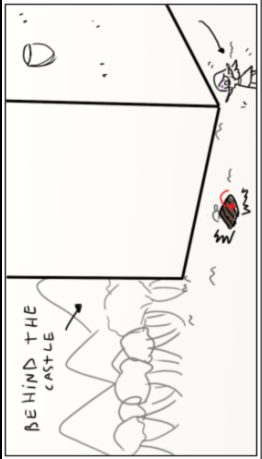


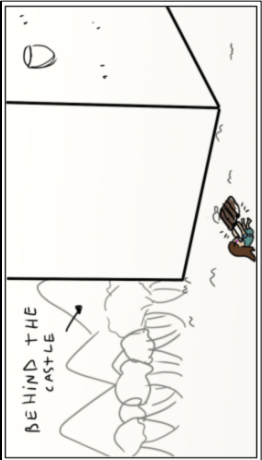
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Raul Reyes - Negotiated Studies 1

Page 17/41

Scene	48	Duration	01:00	Panel	1	Duration	01:00
							
Action Notes They enter into the secret entrance.							

Scene	49	Duration	01:00	Panel	1	Duration	01:00
							
Action Notes The eldest sister sees that.							

Scene	50	Duration	01:00	Panel	1	Duration	01:00
							
Action Notes But when she tries to enter that secret passage she cannot open it.							

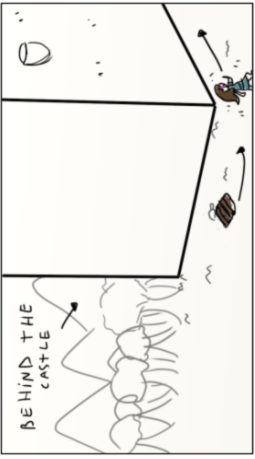
recutboom

Complete Storyboard - Final project

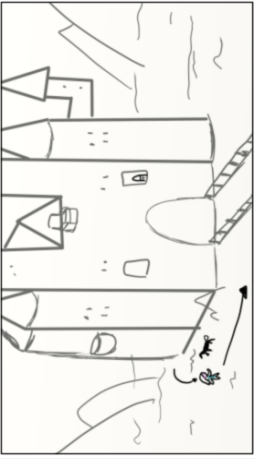
Raul Reyes - Negotiated Studies 1

Page 18/41


Scene	51	Duration	01:00	Panel	1	Duration	01:00
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Scene	52	Duration	01:00	Panel	1	Duration	01:00
-------	----	----------	-------	-------	---	----------	-------




Scene	53	Duration	02:00	Panel	1	Duration	02:00
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Action Notes
Then she goes to the main castle's door.

Action Notes
Then she goes to the main castle's door.

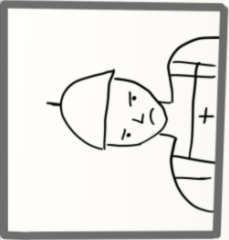
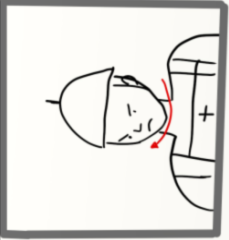
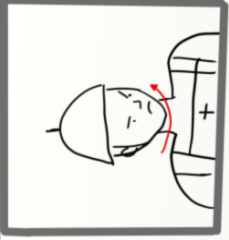
Action Notes
She and talks with the guards for open the door. She explains what is happening, but the guards don't allow her to get inside, they ignore her and tell her that if she wants to enter she has to wait until tomorrow and make a formal appointment.




Complete Storyboard - Final project

Raul Reyes - Negotiated Studies 1

Page 19/41

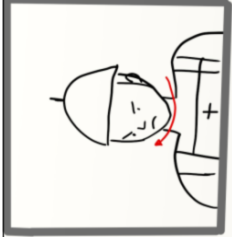
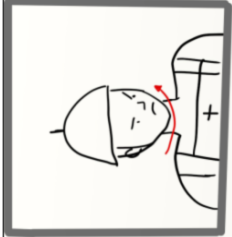
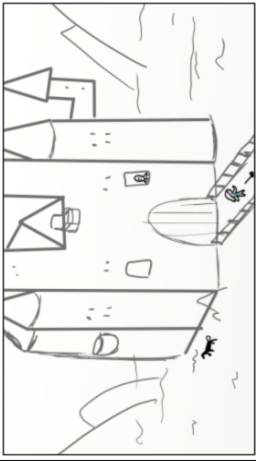
Scene	54	Duration	00:15	Panel	1	Duration	00:15
							
Action Notes Guard saying "No" with his head.							
Scene	55	Duration	00:15	Panel	1	Duration	00:15
							
Action Notes Guard saying "No" with his head.							
Scene	56	Duration	00:15	Panel	1	Duration	00:15
							
Action Notes Guard saying "No" with his head.							




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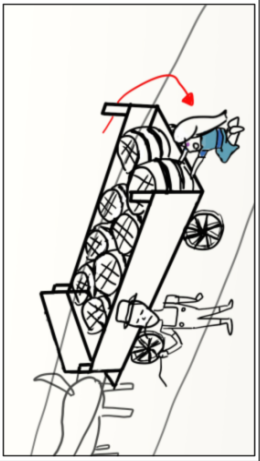
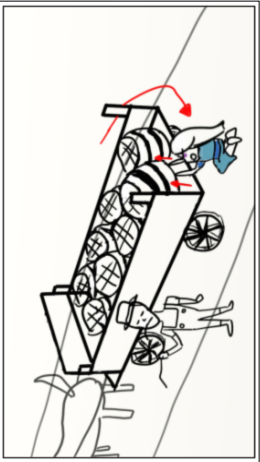
Page 20/41


Scene	57	Duration	00:15	Panel	1	Duration	00:15
							
Action Notes Guard saying "No" with his head.							
Scene	58	Duration	00:15	Panel	1	Duration	00:15
							
Action Notes Guard saying "No" with his head.							
Scene	59	Duration	02:00	Panel	1	Duration	02:00
							
Action Notes The Girl tries to find a way to enter the castle.							



Complete Storyboard - Final project Raul Reyes - Negotiated Studies 1

Page 21/41

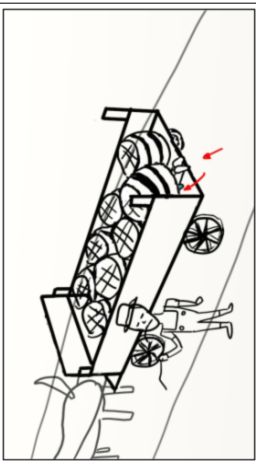
Scene	60	Duration	02:00	Panel	1	Duration	02:00
							
Action Notes She sees a man riding a carriage of goods waiting to enter into the castle.							
Scene	61	Duration	01:00	Panel	1	Duration	01:00
							
Action Notes She sneaks.							
Scene	62	Duration	01:00	Panel	1	Duration	01:00
							
Action Notes She empties one of the barrels from the carriage and gets into it.							

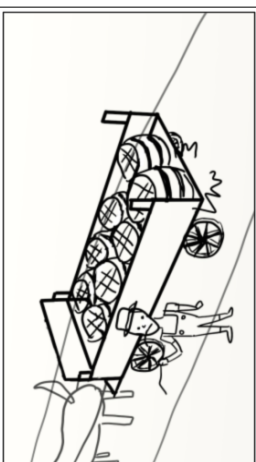



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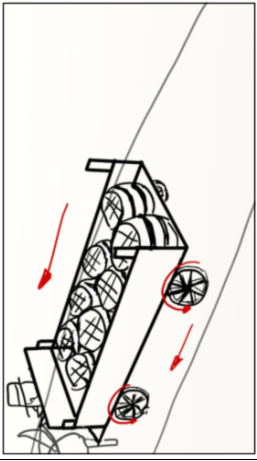
Raul Reyes - Negotiated Studies 1

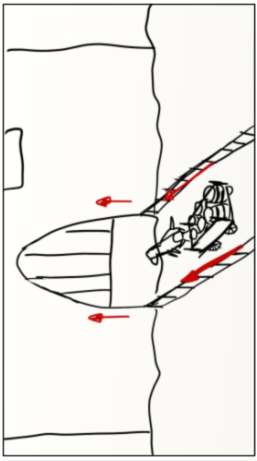
Page 22/41

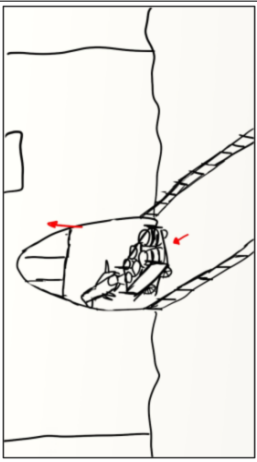
Scene	63	Duration	01:00	Panel	1	Duration	01:00
							
Action Notes She gets into it.							

Scene	64	Duration	01:00	Panel	1	Duration	01:00
							
Action Notes She gets into it.							

Scene	65	Duration	01:00	Panel	1	Duration	01:00
							
Action Notes The carriage begins to move.							

Scene	66	Duration	01:00	Panel	1	Duration	01:00
							
Action Notes The carriage is moving.							

Scene	67	Duration	01:10	Panel	1	Duration	01:10
							
Action Notes The carriage is moving into the castle.							

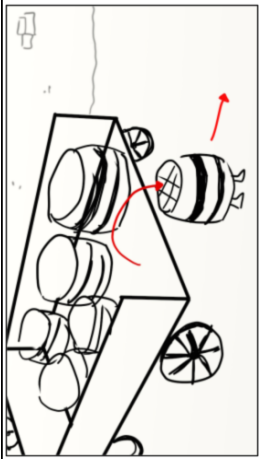
Scene	68	Duration	01:00	Panel	1	Duration	01:00
							
Action Notes The carriage is moving into the castle.							

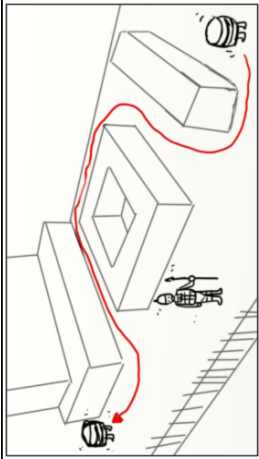
Storyboard


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Raul Reyes - Negotiated Studies 1

Page 24/41

Scene	69	Duration	01:00	Panel	1	Duration	01:00
							
<div>Action Notes</div> <div>The Girl infiltrates the castle hidden in to the barrel.</div>							

Scene	70	Duration	06:00	Panel	1	Duration	06:00
							
<div>Action Notes</div> <div>She sneaks past the guards.</div>							


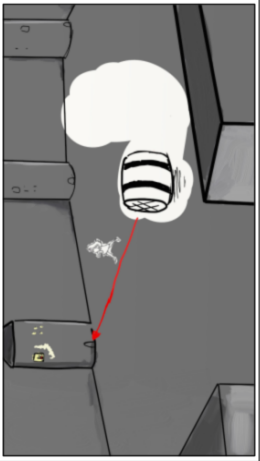
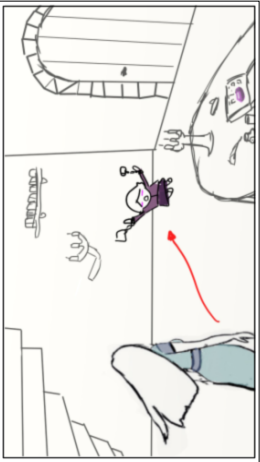
Scene	71	Duration	02:00	Panel	1	Duration	02:00
							
<div>Action Notes</div> <div>She is looking for the Black Knight and she sees him in the top of a tower, passing in front of a window which has light inside.</div>							



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Raul Reyes - Negotiated Studies 1

Page 25/41

Scene	72	Duration	02:00	Panel	1	Duration	02:00
							
Action Notes The black Knight passes through the window.							
Scene	73	Duration	03:00	Panel	1	Duration	03:00
							
Action Notes Girl is going into the castle.							
Scene	74	Duration	02:00	Panel	1	Duration	02:00
							
Action Notes The Girl arrives to the room where the Black Knight is, and she sees her little sister chained.							

Storyboard

animatic

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Raul Reyes - Negotiated Studies 1

Page 26/41

Scene	Duration	Panel	Duration
75	02:00	1	02:00

Action Notes

Then, when the eldest sister is approaching her little sister to save her...

Scene	Duration	Panel	Duration
76	01:00	1	01:00

Action Notes

He heard a noise.

Scene	Duration	Panel	Duration
77	01:00	1	01:00

Action Notes

Suddenly a great cage falls from the roof, trapping the eldest sister.



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Page 27/41

Scene	Duration	Panel	Duration
78	01:00	1	01:00

Action Notes

Suddenly a great cage falls from the roof, trapping the eldest sister.

Notes

Scene	Duration	Panel	Duration
79	02:00	1	02:00

Action Notes

The Black Knight is laughing.

Notes


Scene	Duration	Panel	Duration
80	02:00	1	02:00

Action Notes

The black knight reveals a GIANT purple crystal of mineral with a lot of power to make the eldest sister, who is stronger than her little sister, transform into a beast.

Notes

The Black Knight really wants the eldest sister, and the little sister kidnap? was only a trap for getting the eldest sister into the castle.

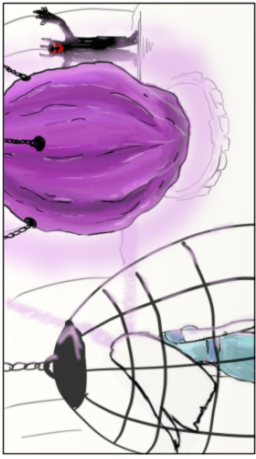


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Raul Reyes - Negotiated Studies 1

Page 28/41

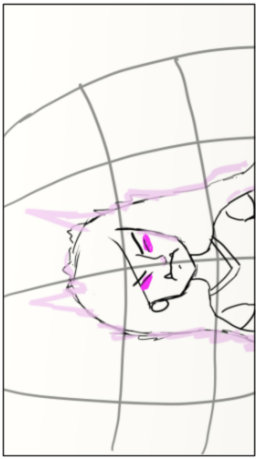
Scene	Duration	Panel	Duration	Panel	Duration
81	02:00	1	02:00		



Action Notes

The Girls react infront the giant mineral.

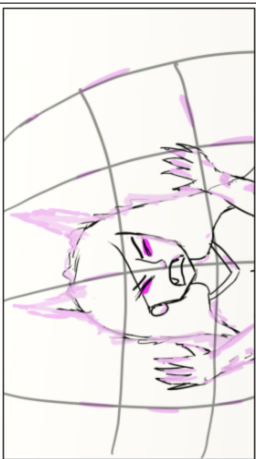
Scene	Duration	Panel	Duration	Panel	Duration
82	01:00	1	01:00		



Action Notes


The light of the giant mineral is too strong, and the eldest sister tries to control her beast transformation, but is too hard for her due to the very strong light. They always train with little crystals of that mineral and this is too big and powerful.

Scene	Duration	Panel	Duration	Panel	Duration
83	01:00	1	01:00		



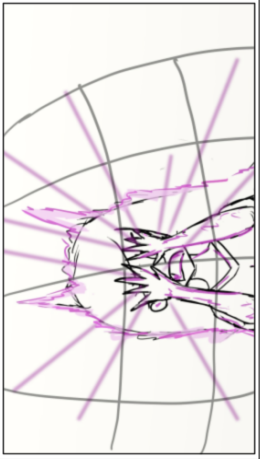
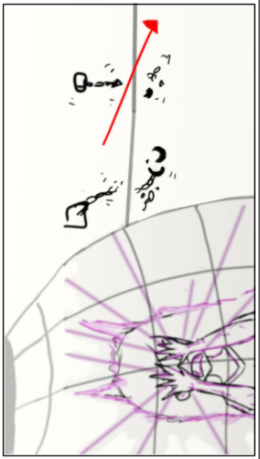

Action Notes

She screams, it's difficult to control herself.

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Raul Reyes – Negotiated Studies 1

Page 29/41

Scene	84	Duration	01:00	Panel	1	Duration	01:00
							
Action Notes He cover her eyes with her hands, but the power of the crystal is so strong.							
Scene	85	Duration	02:00	Panel	1	Duration	02:00
							
Action Notes Then we see the chains where the little sister was trapped broken.							
Notes Then (we don't see that, it happens out of shot), the little girl, who has reacted before to the crystal (because she is younger) transform into a beast and gets released of the chains.							
Scene	86	Duration	01:15	Panel	1	Duration	01:15
							
Action Notes The Black Knight is laughing cause he is looking how the eldest sister is trying to stop the transformation							


Storyboard

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Raul Reyes - Negotiated Studies 1


Page 30/41

Scene	Duration	Panel	Duration
87	01:00	1	01:00




Action Notes
Suddenly two purple giant eyes appears behind the Black Knight. It's the little sister transformed into the beast.

Scene	Duration	Panel	Duration
88	01:00	1	01:00




Action Notes
The little girl transformed into a beast blinks.

Scene	Duration	Panel	Duration
89	02:00	1	02:00




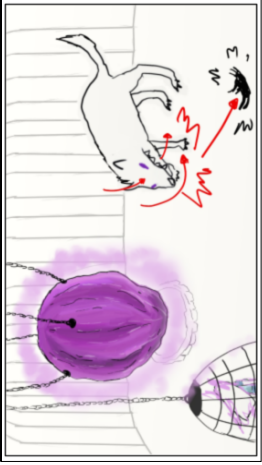

Action Notes
The black Knights turns.



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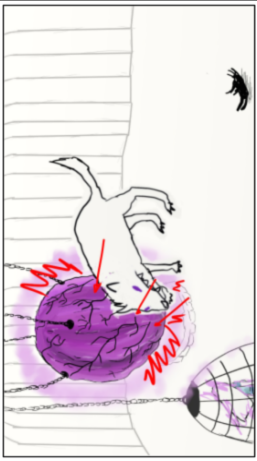
Raul Reyes – Negotiated Studies 1


Page 31/41

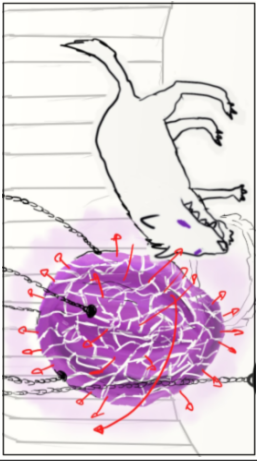
Scene	90	Duration	00:15	Panel	1	Duration	00:15
							
Action Notes Beast move her head.							
Scene	91	Duration	01:00	Panel	1	Duration	01:00
							
Action Notes Then the little girl knocks out the Black Knight.							
Scene	92	Duration	01:00	Panel	1	Duration	01:00
							
Action Notes She begins to run.							




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Scene 93	Duration 01:00	Panel 1	Duration 01:00
			
Action Notes She hits very strong the Giant purple Crystal.			

Scene 93_1	Duration 02:00	Panel 1	Duration 02:00
			
Action Notes The Giant crystal began to crack.			




Scene 94	Duration 01:00	Panel 1	Duration 01:00
			
Action Notes Still cracking.			




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Raul Reyes - Negotiated Studies 1

Page 33/41

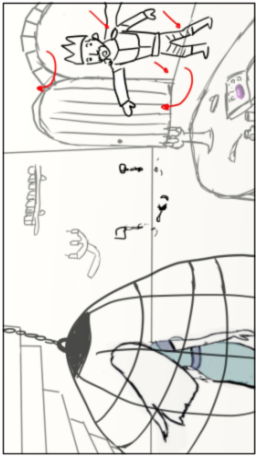
Scene	95	Duration	01:00	Panel	1	Duration	01:00
							
Action Notes The Crystal crashes in a lot of pieces.							
Scene	96	Duration	01:00	Panel	1	Duration	01:00
							
Action Notes The magic power inside the enormous crystal, makes a shock wave that finish crashing all the little fragments into purple dust, like shiny magic dust, which falls, and feels really magic and calm. Then the eldest sister stops transforming into a beast.							
Scene	97	Duration	02:00	Panel	1	Duration	02:00
							
Action Notes The Little sister gets back to her normal form.							




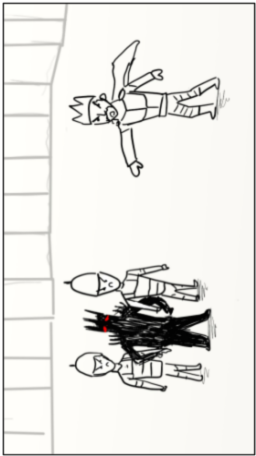
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Raul Reyes - Negotiated Studies 1

Page 34/41

Scene	98	Duration	02:00	Panel	1	Duration	02:00
							
<div>Action Notes</div> <div>The king and his guards enter to the room attracted by the great magic explosion.</div>							

Scene	99	Duration	02:00	Panel	1	Duration	02:00
							
<div>Action Notes</div> <div>He opens the cage where the eldest sister is trapped.</div>							

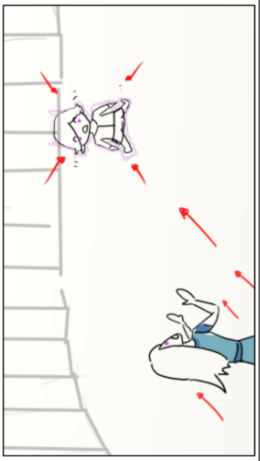
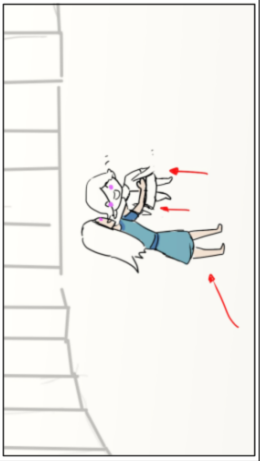
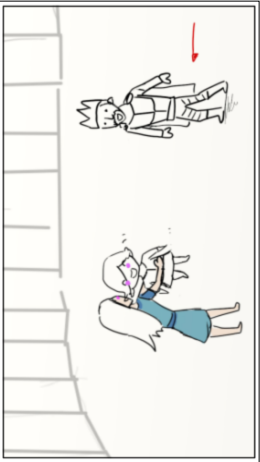
Scene	100	Duration	02:00	Panel	1	Duration	02:00
							
<div>Action Notes</div> <div>The King orders the guards to arrest the Black Knight.</div>							




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Raul Reyes – Negotiated Studies 1

Page 35/41

Scene	101	Duration	01:15	Panel	1	Duration	01:15
							
<div>Action Notes</div> <div>Eldest sister runs to her little sister. She is still transforming into his normal form.</div>							
Scene	102	Duration	01:15	Panel	1	Duration	01:15
							
<div>Action Notes</div> <div>She hugs her happily.</div>							
Scene	103	Duration	02:00	Panel	1	Duration	02:00
							
<div>Action Notes</div> <div>The King approaches them.</div>							

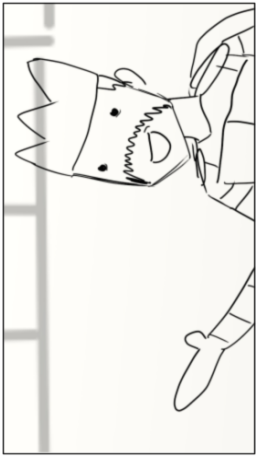


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Raul Reyes - Negotiated Studies 1

Page 36/41

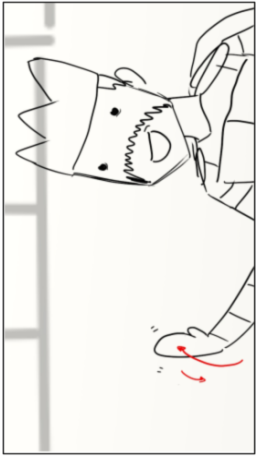
Scene	Duration	Panel	Duration	Panel	Duration
104	02:00	1	02:00	1	02:00



Action Notes

The King looks at the eldest sister, and with happiness invites them to enter the castle.

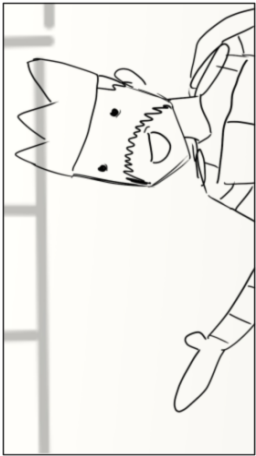
Scene	Duration	Panel	Duration	Panel	Duration
105	00:15	1	00:15	1	00:15



Action Notes


The King looks at the eldest sister, and with happiness invites them to enter the castle

Scene	Duration	Panel	Duration	Panel	Duration
104_1	00:15	1	00:15	1	00:15



Action Notes


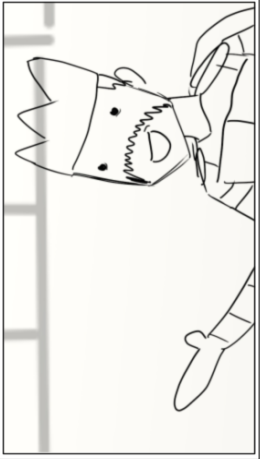

The King looks at the eldest sister, and with happiness invites them to enter the castle




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Raul Reyes - Negotiated Studies 1

Page 37/41

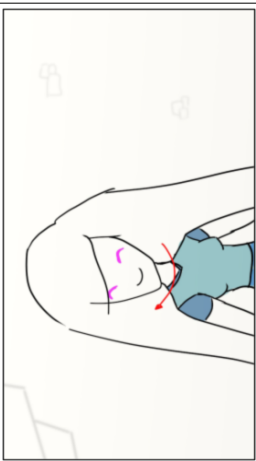
Scene	105_1	Duration	00:15	Panel	1	Duration	00:15
							
Action Notes The King looks at the eldest sister, and with happiness invites them to enter the castle							
Scene	104_2	Duration	00:20	Panel	1	Duration	00:20
							
Action Notes The King looks at the eldest sister, and with happiness invites them to enter the castle							
Scene	106	Duration	02:00	Panel	1	Duration	02:00
							
Action Notes But the Girl refuses the invitation with grateful expression, they have to return to the forest, it's her place.							

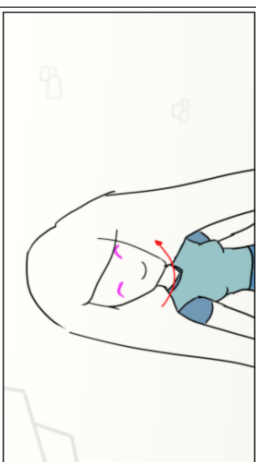


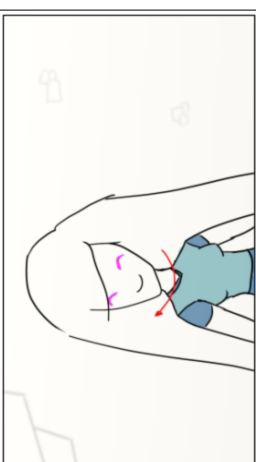
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Raul Reyes - Negotiated Studies 1

Page 38/41

Scene	107	Duration	00:15	Panel	1	Duration	00:15
							
<div>Action Notes</div> <p>But the Girl refuses the invitation with grateful expression, they have to return to the forest, it's her place.</p>							

Scene	108	Duration	00:15	Panel	1	Duration	00:15
							
<div>Action Notes</div> <p>But the Girl refuses the invitation with grateful expression, they have to return to the forest, it's her place.</p>							

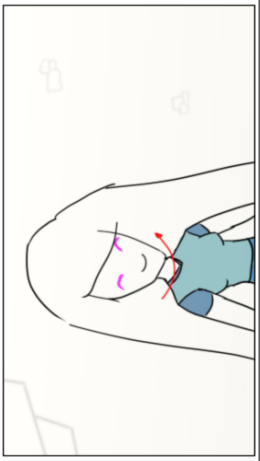


Scene	107_1	Duration	00:15	Panel	1	Duration	00:15
							
<div>Action Notes</div> <p>But the Girl refuses the invitation with grateful expression, they have to return to the forest, it's her place.</p>							



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Raul Reyes - Negotiated Studies 1

Page 39/41


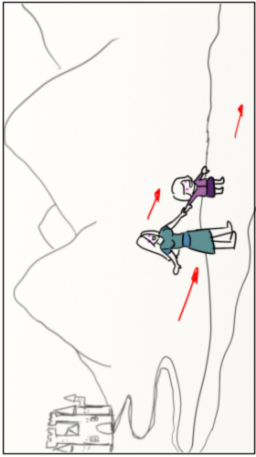
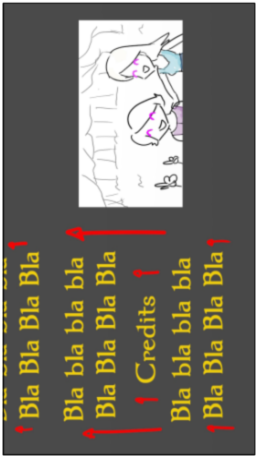
Scene	108_1	Duration	00:15	Panel	1	Duration	00:15
							
Action Notes But the Girl refuses the invitation with grateful expression, they have to return to the forest, it's her place.							
Scene	106_1	Duration	00:20	Panel	1	Duration	00:20
							
Action Notes But the Girl refuses the invitation with grateful expression, they have to return to the forest, it's her place.							
Scene	109	Duration	01:00	Panel	1	Duration	01:00
							
Action Notes The King understand, he will keep their secret.							

Storyboard

Complete Storyboard - Final project

Raul Reyes - Negotiated Studies 1

Page 40/41

Scene	110	Duration	02:00	Panel	1	Duration	02:00
							
Action Notes The King winks.							
Scene	111	Duration	04:00	Panel	1	Duration	04:00
							
Action Notes The Girl and her little sister return home, relieved and happy because at the end everything has ended well and the king is keeping her secret safe. That's THE END of the story.							
Scene	112	Duration	02:00	Panel	1	Duration	02:00
							
Action Notes During the credits we see some shots of the Girl's continuing her live happily,							



Scene	113	Duration	02:00	Panel	1	Duration	02:00
-------	-----	----------	-------	-------	---	----------	-------

! Bla Bla Bla Bla !

Bla bla bla bla

! Bla Bla Bla Bla

! Credits !

Bla bla bla bla

! Bla Bla Bla Bla !

Action Notes

And some shot of the King visiting them in the forest.

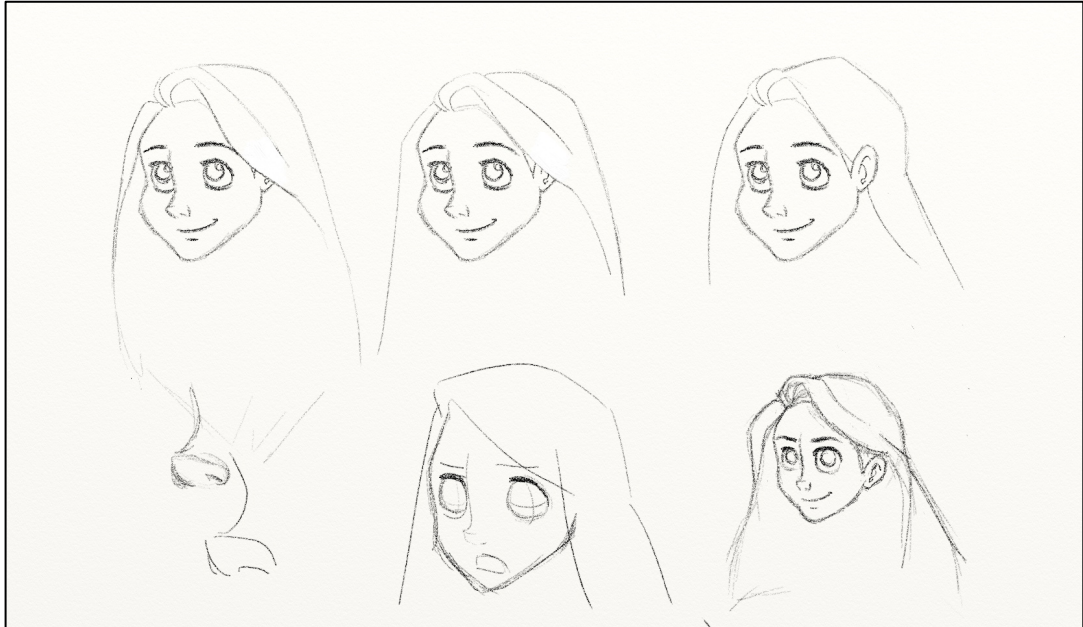
NO PANEL

NO PANEL

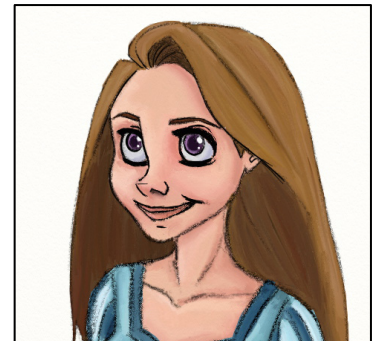
Annex V. Rejected Character Designs

a) Keira Rejected Designs:

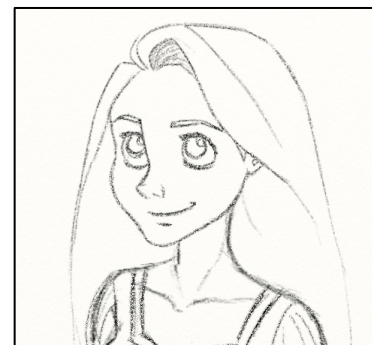
Keira rejected face designs and nose tests:



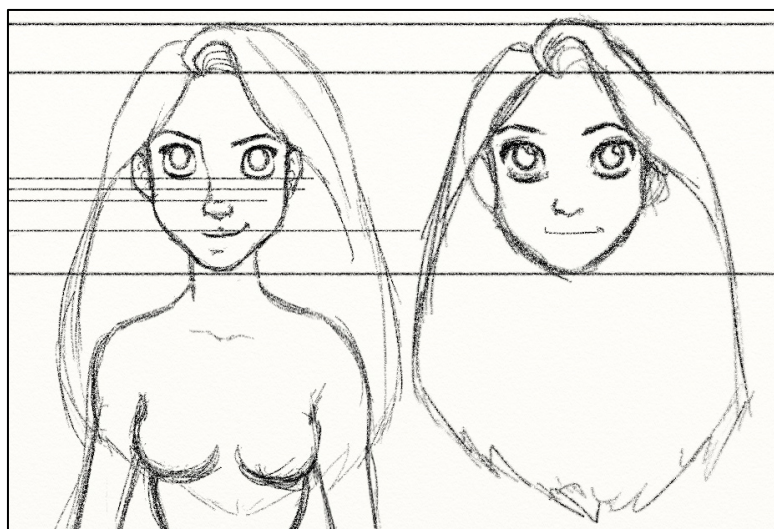
I have done some face tests with marked lips to make her more feminine but it doesn't work:



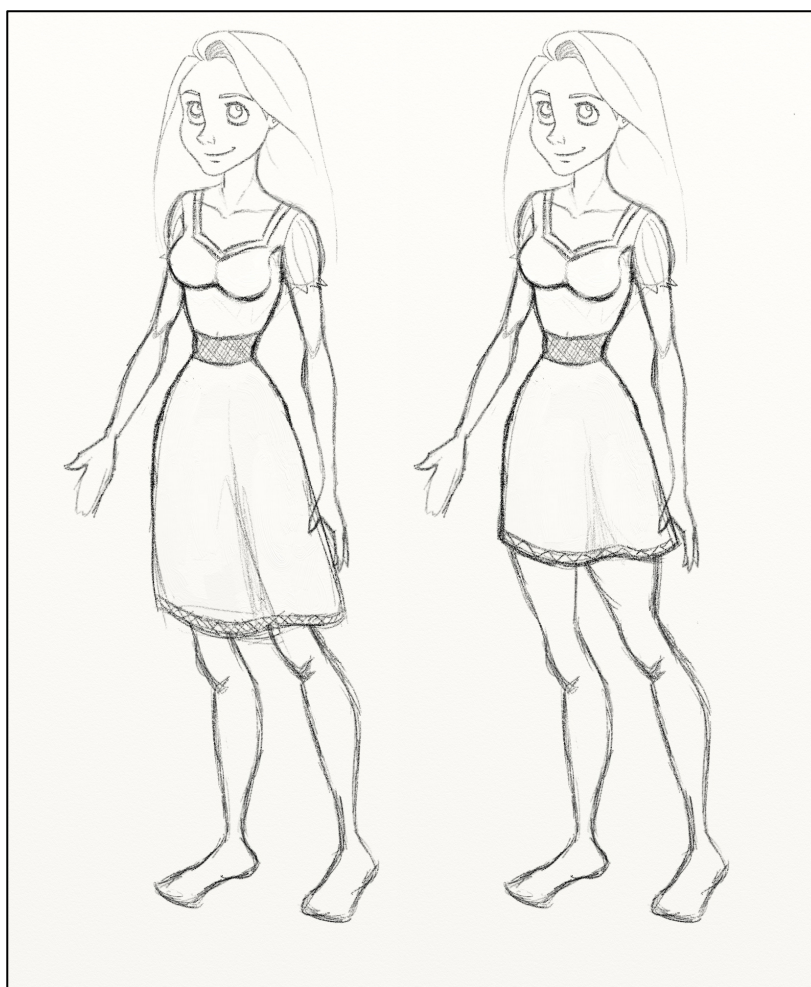
Keira pre-definitive face, the Hair and face shape changes on the final design, also the forehead was bigger:



Keira different front view tests:

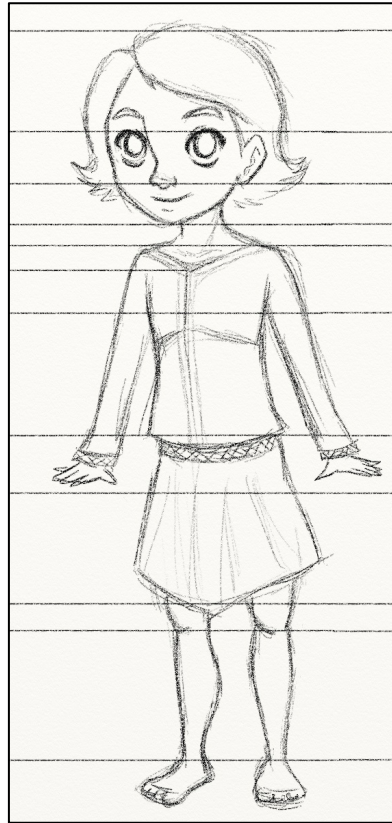


Keira different skirt tests without the “V” form:

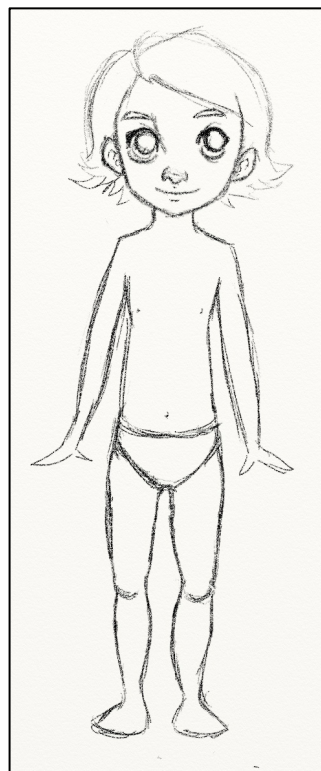


b) Kaylee Rejected Designs:

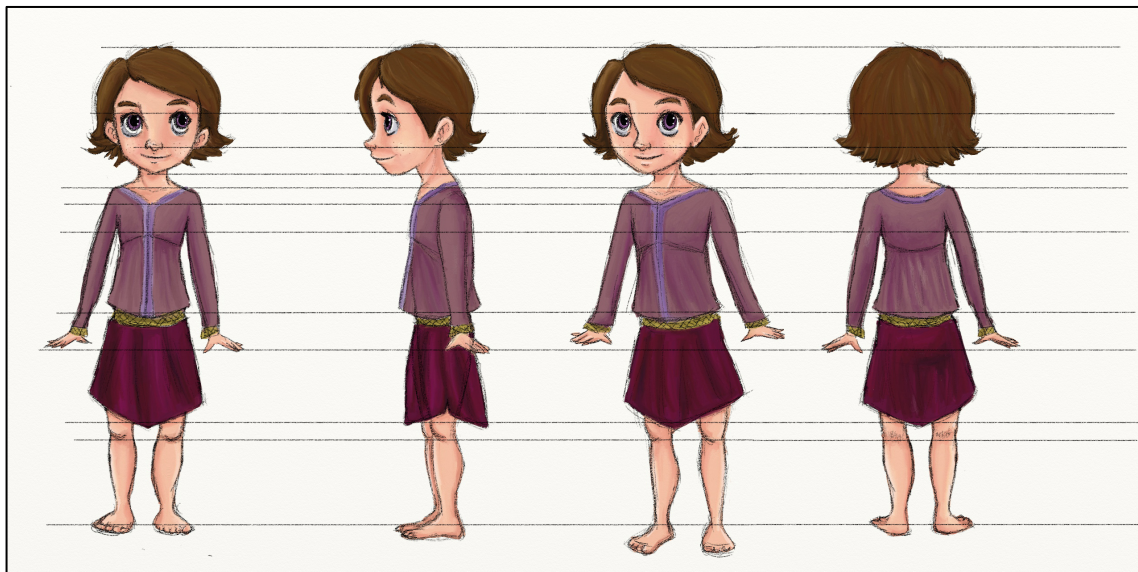
Kaylee first design, more stretched and less childish:



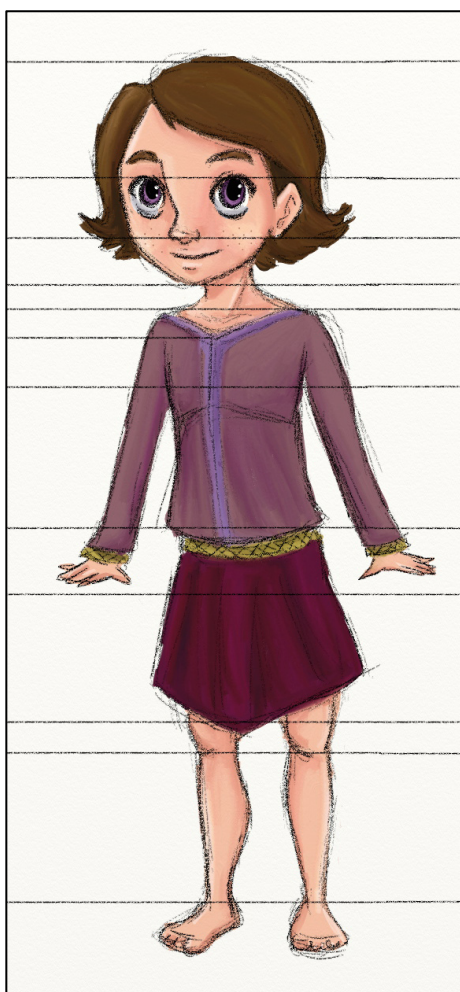
Kaylee early body design:



Rejected Color scheme, based on the colors used in the Trailer.



Rejected Color scheme on the old Kaylee rejected design:

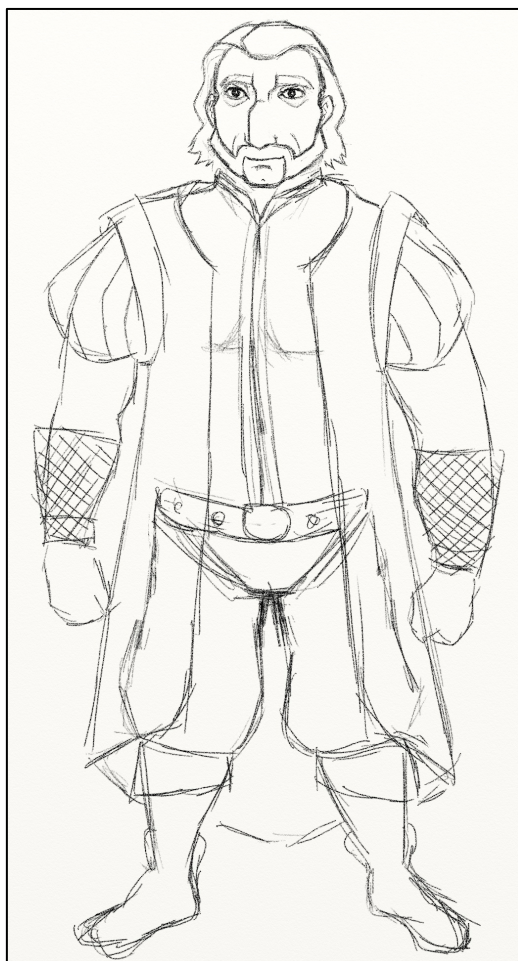


c) The King Rejected Designs:

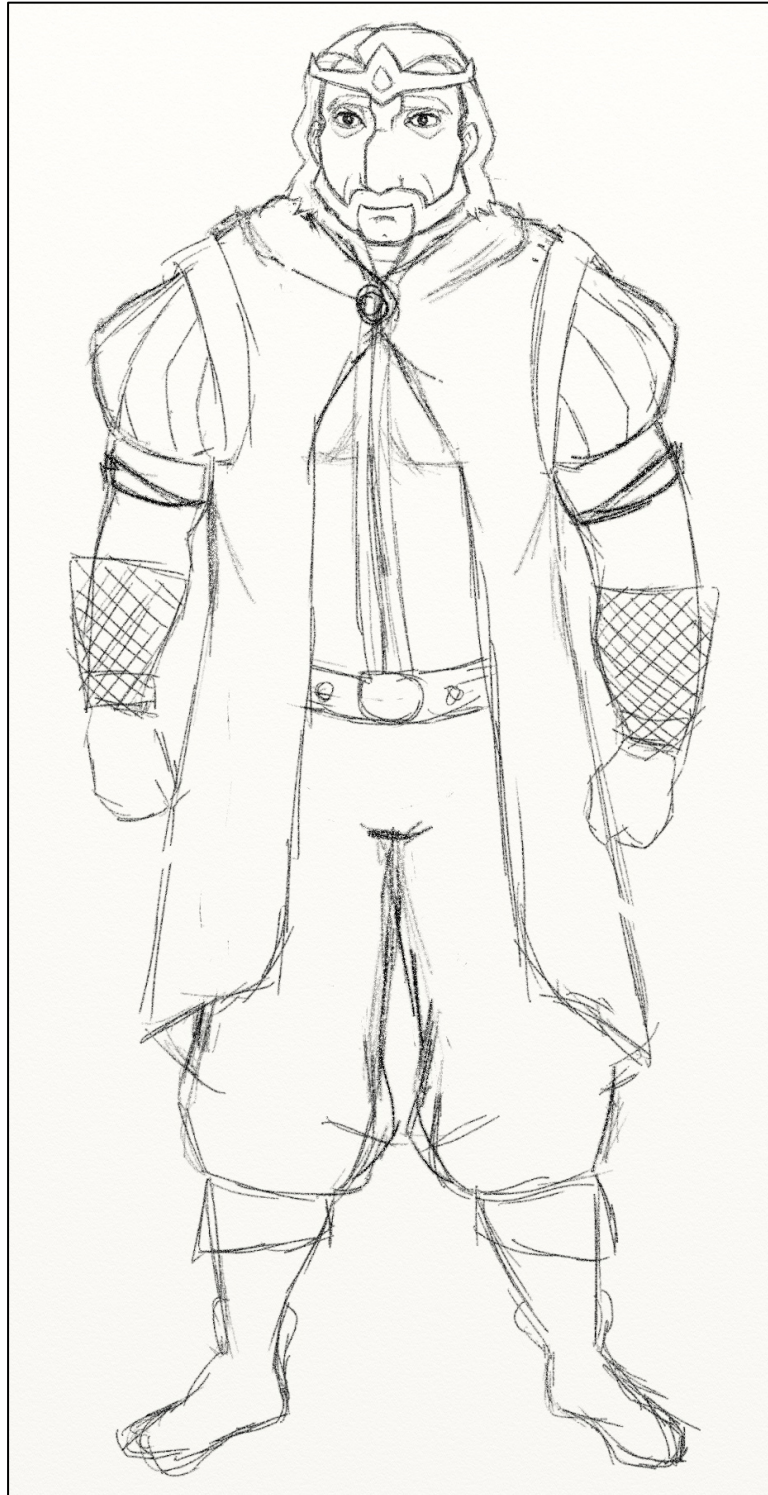
King rejected faces:



King early body and outfit rejected designs:



At the beginning the first King's definitive outfit I made was snug and warm. I rejected it because it doesn't match with the climate of the short; the climate in this world is hotter so characters wear open clothes.



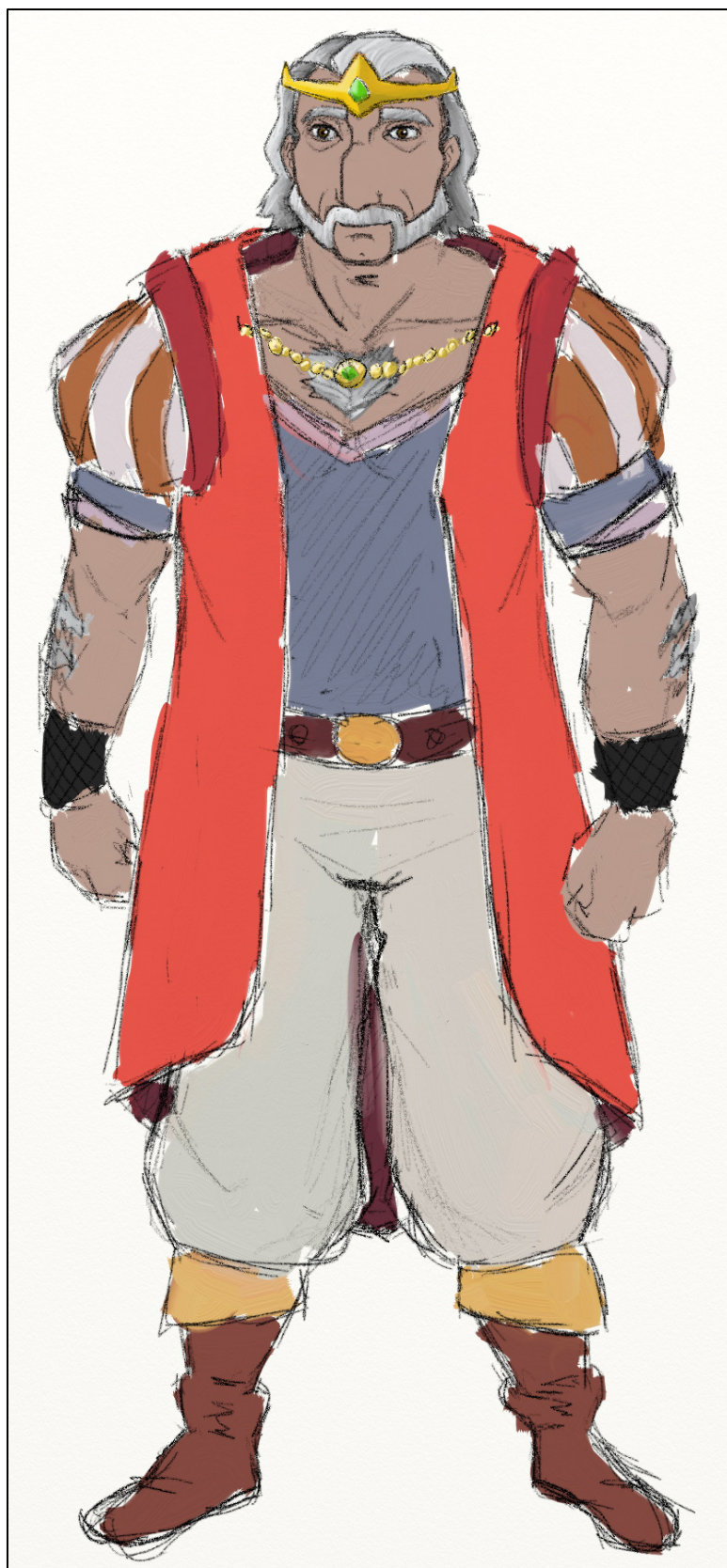
Alternative crown design:



With the nearly finished design of the King I realized that an old Man like him looks strange without hair on his body. The original version doesn't have hair and looks like it is shaved, so I added hair to the final version.



This is the first colour scheme I did for the King, it's based on the King from "The Legend of Zelda" series:

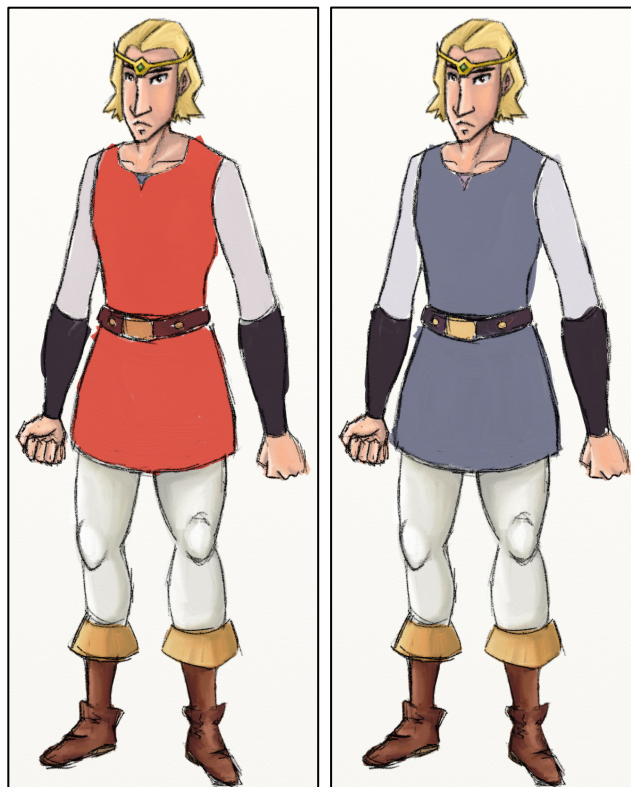


d) Ewan – Young Black Knight Rejected Designs:

Early Young Knight design:



Alternative colour rejected schemes:



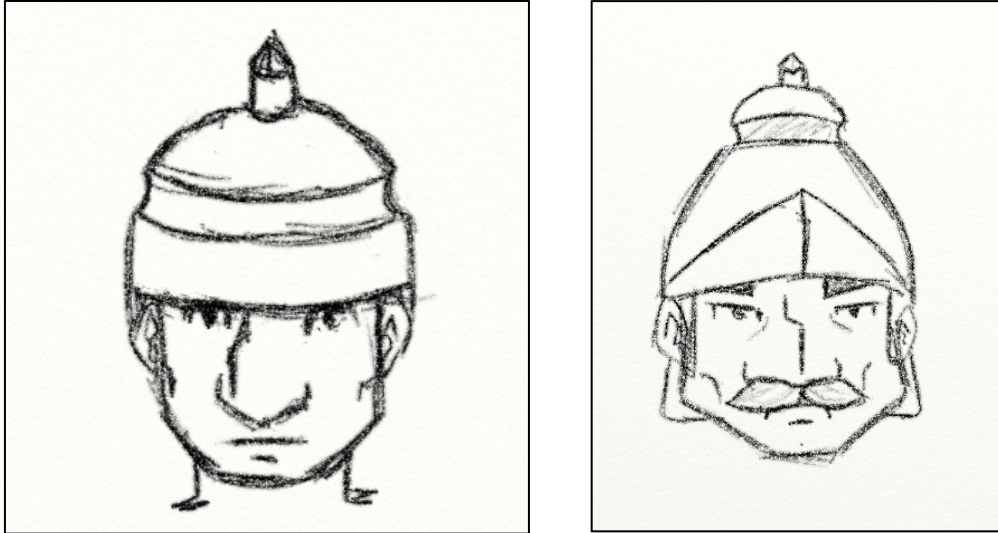
e) The Black Knight Rejected Designs:

Black Knight first design, and Black Knight rejected colour scheme. At the beginning I have painted the Black Knight with blue colours, but with this palette it doesn't look evil and darkness. The visibility is better but it doesn't match character's personality.

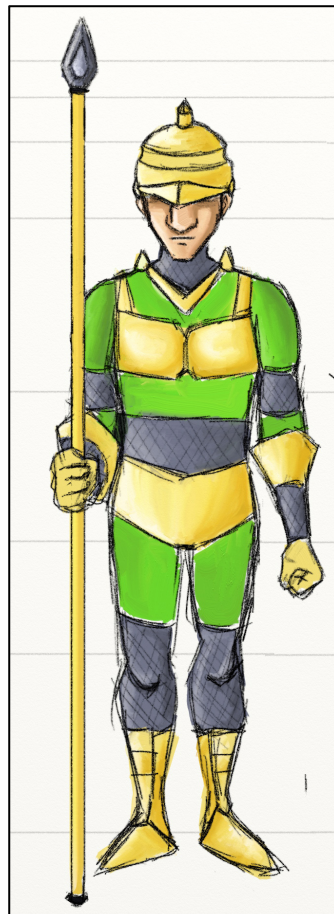


f) Castle Guards Rejected Designs:

Rejected Guard faces:

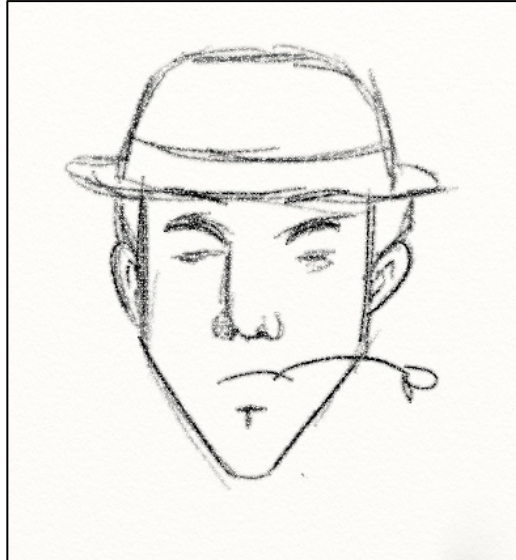
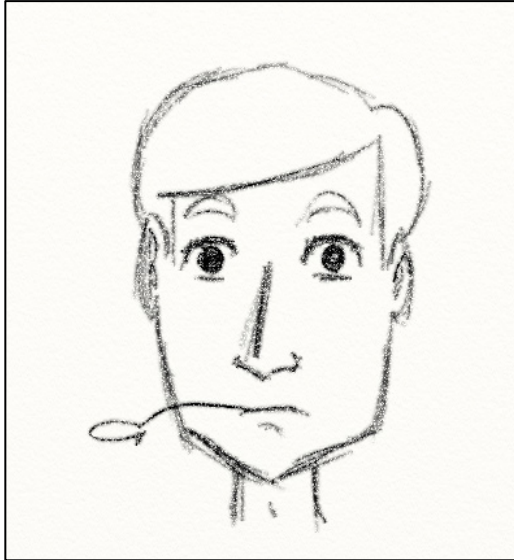


Originally the Guard colors were too striking, so I decided to add some black parts to give seriousness to the design. Rejected Guard color scheme:



g) Farmer Rejected Designs:

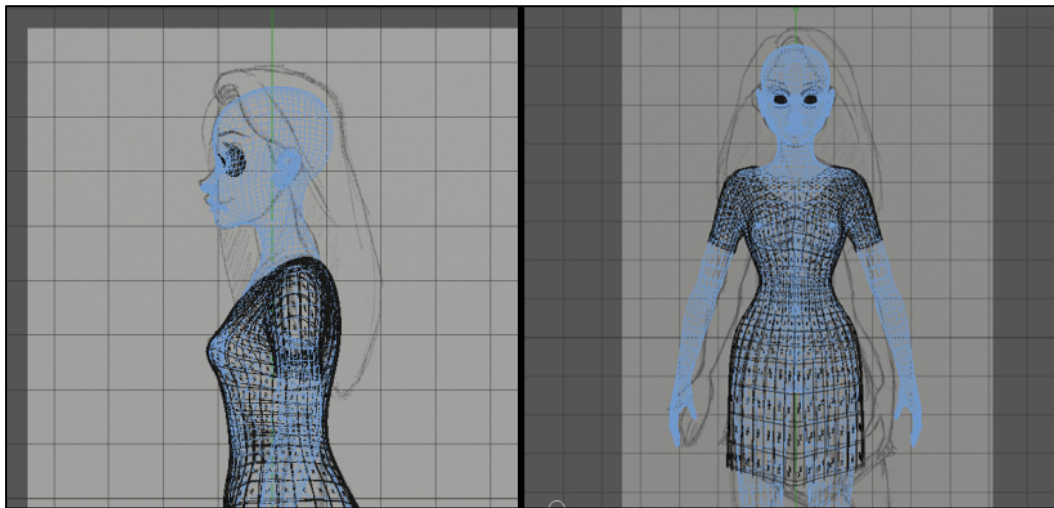
Rejected Farmer Faces:



Annex VI. Keira 3D Modeling

I had a lot of problems with the clothes, because I have never done this before. I have saw and read lots of tutorials. I have done a lot of tests and finally I have got some results. Doing real clothes with physics is really hard. There are a lot of little problems that appears when doing the clothes, and it's very hard to get all working perfect. Also, is very difficult to achieve a specific form.

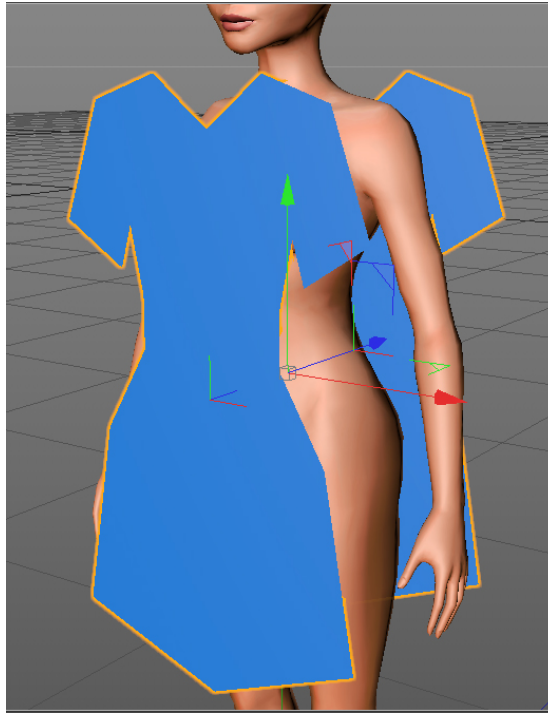
I have started modelling polygon by polygon the Head of Keira from the side and front designs/views I have done. I have put the views in the 3D program and I have started modeling, once I had a head that I have liked, I started modeling the body also from the design views.



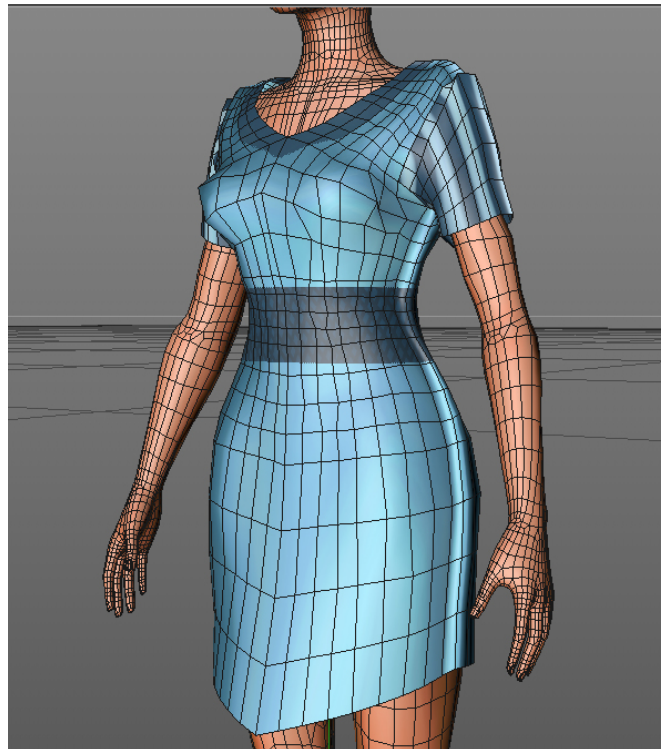
First I was doing the 3D design with the exact form of the original drawn design. But then I had to adapt some parts into the perspective view in order to make it look proportionate and good looking in 3D. The texturing of the body is done with “Art Shader”, as I said on the research about Cel Shading, I drawn the texture/material on ArtRage, and then I import it in the 3D software in order to use as an Art Shader texture.



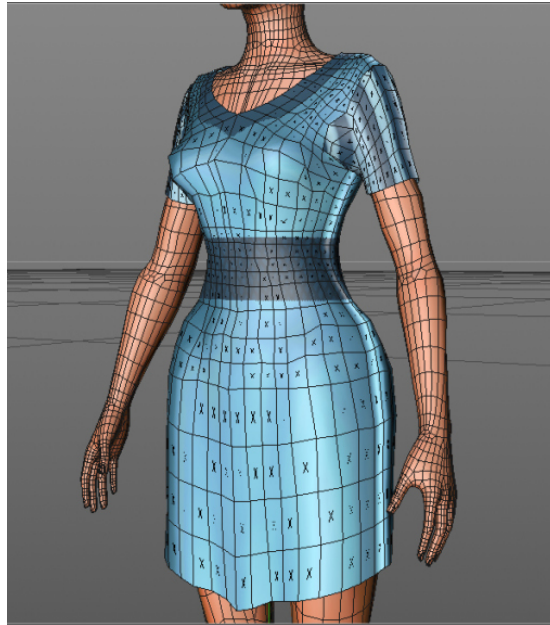
This is the Dress pattern I have done in order to apply the cloth physics, I have failed lots of times, this was mostly the tenth attempt, and the good one:



This is the dress, adapted to the body with the Dress-O-Matic function of Cinema 4D, it is also textured:

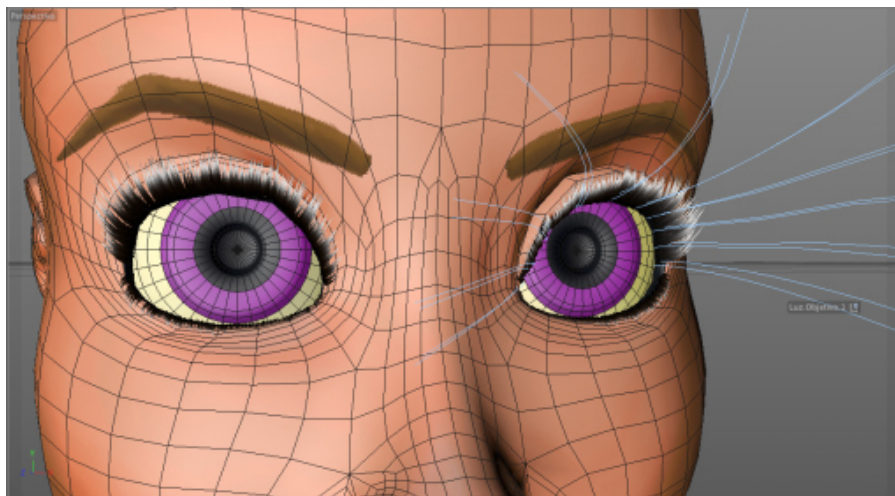


And this is the dress relaxed, I have attached the top of the dress to the body with a belt tag, also here I had done lots of versions until it worked. The skirt part is relaxed. Arrive to this result has taken me a lot of work; it has been very difficult to work with the cloth dynamics in order to make all work perfectly.



Finally, I combined the cloth with a NURBS Cloth object for make the cloth thicker, and a Nurbs Object for smothing the mesh. I have also applied a nurbs object to the body mesh, etc.

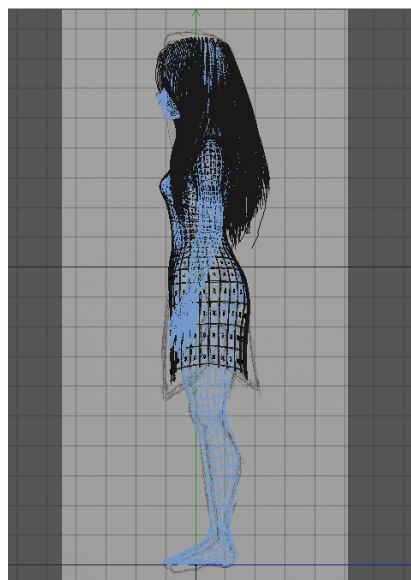
I had also research for tutorials in order to learn how to do eyelashes, is similar to hair, so it wasn't so difficult. Eyelashes don't need dynamics so they are easier to shape.



I had some problems with the hair of the head itself. It is very difficult to control hair and get the appropriate shape. I practiced this before but it was difficult too. Is really hard to get the dynamics of the hair work as you want, but finally I get it.



I made a capture of the side view, with the 2D reference design at the background:



And after all this hard work, this is not showing in the short because finally I will do my characters in 2D. I've learned a lot doing this model, so it worth the effort. This is the full body render of the final version.



Also you can found a turntable video of the final 3D design/modeling in the DVD under the file: Keira3D_Turntable.mp4.

Annex VII. DVD Contents

Under the folder “01_Definitive_Files”:

- Digital version of all the documentation of the project (report, annexes, economical study): *PFG_Report_Raul_Reyes_Luque.pdf*
- The Animated Short (final version): *The_Legend_of_the_Purple_Eyes.mp4*
- The Advanced Layout: *Advanced_Layout.mp4*
- The Animatic: *Complete_Animatic.mp4*
- The Storyboard: *Complete_Storyboard.mp4*
- The Trailer (final version): *Trailer_FinalVersion.mp4*
- Trailer Animatic (final version): *Trailer_Animatic02.mp4*
- Trailer Storyboard (final version): *Trailer_Storyboard03.pdf*

Under the folder “02_Tests”:

- Main Animation and Style Test: *MainAnimation_Test.mov*
- Discarded animation test: *Animation_Test.mp4*
- Keira frame-by-frame animation test: *Keira_framebyframe_Test.gif*
- Keira 3D modeling turntable: *Keira3D_Turntable.mp4*

Under the folder “03_Non-Definitive_Files”

- Sketches of the Trailer: *Trailer_Sketch.pdf*
- Non-definitive Animatic: *Trailer_Animatic01.mp4*
- First non-definitive version of the Storyboard: *Trailer_Storyboard01.pdf*
- Second non-definitive version of the Storyboard: *Trailer_Storyboard02.pdf*

Under the folder “04_Scene_Designs”

- All the Jpeg files corresponding to the large original files of the scenario designs.

Under the folder “05_Character_Designs”

- All the Jpeg files corresponding to the large original files of the character designs; views and expression sheets.